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THE BUILDER

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A Priory in Roussillon.

ROUSSILLON is a portion of France which only finally became French territory in 1659. It had then been Spanish since Charles VIII. had returned the province to Aragon, having been occupied in 1462 by Louis XI., who took Perpignan in 1475. From 1276 to 1344 this city had been the capital of the kingdom of Majorca, and the residence of a splendid court. The kingdom consisted of the Balearic Isles, Roussillon, Catalonia, Cerdagne, and Montpellier, and was founded by the will of James I. of Aragon, "El Conquistador," who designated his son James as his heir to this portion of his dominions; his brother, Pedro III. of Aragon, however, compelled him to recognise his suzerainty in 1279. The kingdom was annexed to Aragon in 1344. So early as 1172 Guinard, Count of Roussillon, left his dominions to Alfonso II. of Aragon, including Perpignan, of which town the earliest records date from the Xth century, calling it Villa Perpiniani, Villa de Perpiniano, and Perpinianum.

The name Roussillon is a corruption of that of the ancient capital of the district, the "Ruscino Latinorum" of Pliny; in 801 it is met with as "Ruscellio," and in 816 as "Rosciliona," when it was still the chief political centre of the district. In the XIIth century it had sunk to the condition of a village, but still preserving a church and said to be known to the ancients as "Castrum Ruscinonense" or "Rossilionense." The site is some 2½ miles from Perpignan on the way to Canet, which is near the mouth of the River Tet, and is marked by a solitary tower, the remains of a seignorial castle of the XIIth century, which was given to the town of Perpignan by its owner after 1629. It is still known as "Castell Rossello." In such a borderland French and Spanish influences mingle, and it is a moot point whether several of the celebrated buildings of Catalonia and of Roussillon are the work of Catalans or of Frenchmen. There are many buildings of considerable archæological interest hidden in these Pyrenean valleys, and it is proposed to now describe one within easy reach of Perpignan, the priory of Serrabona, which lies on the hillside half-an-hour's climb above the road to Boule-d'Amont in the valley of the Boulés amid fine rugged scenery.

A railway runs from Pergignan up the valley of the Tet to Villefranche-le-Conflent, passing villages with signs of Spanish influence in their appearance, such as the Moorish battlements of the churches and the iron cages on the corners of the towers in which the bells are hung. The valley of the Boulés opens at Boule-Ternère, which is served by a station on this line. The mediæval name of the place was Bula-tera-nera, and the land around, well irrigated and dark, explains the name. The place once belonged to Conflent and was always under the same lords as Ille, further down the valley of the Tet. There are remains of a mediæval castle, and the defences served their purpose in 1542 when the village successfully resisted a detachment of the army of the Dauphin, then besieging Perpignan. The hill upon and around which the buildings cluster is crowned by a church, apparently of late XIIIth or early XIVth-century work, to judge by the vaulting; the fittings show Spanish influence, especially in the elaborate XVIIth-century *retablos*.

Serrabona is some six miles up the valley, and the road hugs the mountain side on one flank or the other, showing signs of hasty repair from the damage wrought by winter floods, which leave wreckage of trees below by the torrent. It is necessary to take a guide, as the priory is not visible from the road.

The structures have been a good deal deformed by their conversion into farm buildings, and the approach is through a portion of the farm and a stack yard. The exterior is bare and savage, and almost entirely without decoration except on the south side, where there are traces of something like a cloister high above the ground, though there is no sign of roof on the wall west of this space, nor of any projection from the transept wall. Here, at each end of the group, is a large unmoulded arch with impost, and two groups of three arches with a pier between, rising to the height of the

Fig. 1. External Arcading, Serrabona.

crown of the big arches. The small arches have two orders, the outside one being stop-chamfered with a hollow. They originally rested on twin colonnettes, with a decided entasis, of a marble which has weathered to a beautiful golden yellow; the bases have claws and the caps are finely carved; when these openings were filled up the inner colonnettes were used to decorate the interior of the apse. (Fig. 1). Above these arches is a bracketed cornice, and there are marks of a sloping roof above the westward large arch. The ground falls precipitously almost from the walls, and there is no room for a cloister of the usual design. The space within is only entered from the transept, but has been altered in its arrangement. It may have communicated with the inhabited portion of the priory, of which there are remains to the westward. Many Spanish Romanesque churches have such external arcading. The apse has a bracketed cornice with stones set angle-wise between two shallow courses and a hollow to finish beneath the tiles. The nave, transepts, and bell-tower terminate in low gables rising well above the tiles. The tower is to the north-west of the original façade and has square-headed window openings. The narthex appears to have been squeezed in between the church and the tower. To the north of the church is a burial ground.

The church is entered by a round-arched door in the north wall of the narthex, enriched with mouldings, of which the most important one bears a chequered decoration, and with shafts in the jambs and carved caps. Upon the door is a fine iron bolt and ring of a rather early type of design. The narthex has been added without removing previous building, and the north wall of the nave continues across it on two great arches with imposts, quite irrespective of the carved and vaulted portion. One of these gives entrance to a westward passage. The curious irregularity of the juncture of the XIIth-century narthex with the older work (shown in the drawing, Fig. 2) appears to be caused by the desire to make the gallery fill the space above without altering the older wall. The outer arch of the westward double range is ornamented on the soffit with four-leaved rosettes (also used on some of the abaci and on a portion of the reredos), a detail found at Elne, and these are repeated on the western face of the wall round the arch with heads of monsters as a kind of drip-stone termination a little above the abaci. This suggests that at the time the narthex was built it was external. On one of these caps is a lioness bearing considerable resemblance to those on a cap in the narthex at Moissac.

The farm buildings against the west end make investigation very difficult, as there is no light except that entering by the door. M. Vidal says there is a fine doorway there, but inaccessible. The plan, Fig. 3 (from Lenoir's "Architecture Monastique") shows no westward door, nor does it give the curious irregularities. The narthex proper, which supports the gallery above, consists of six quadripartite vaults, each about 6 ft. square, resting upon colonnettes of red mottled Pyrenean marble. The western range has a pier at each end and two pairs of columns within, which support three twin unmoulded arches with a sinking between them. The same arrangement is used in the two arches on the north side; those on the south side are walled up. The rest of the colonnettes are single. The main arches are all semicircular and unmoulded, the voussoirs being long and shallow as at Elne. The cross ribs are faced with a roll 6 in. across and are separate from the filling in and without any common keystone at the juncture, thus having no constructional value; being apparently the work of an architect who desired to follow the new fashion, but did not understand it. The bases have claws, and the lower torus is much larger than the upper. On the caps are figures of monsters face to face, lionesses with curled manes and tails terminating in a flower-knop, both in arrangement and detail betraying oriental influence. The eyes, nostrils, and corners of the lips are worked with the drill, and lead is inserted in the iris—a treatment also found at Elne and in other places in Roussillon. This narthex is one of the principal curiosities of Serrabona.

The east wall of the narthex is pierced by the west door of the church; on each side of it is a round-arched arcade of two arches, unmoulded except for a hollow ornamented with the same four-pointed rosettes already noticed on the abaci. The nave has a pointed barrel vault without supporting arches. In the south wall are two narrow-pointed windows high up and one square-headed; on the north side is a later window. Just inside the west wall is a niche and on the walls are remains of painting among which familiar XIIth-century patterns may be recognised. From the north wall, close to the transept, a wheel of sixteen bells projects, of which several are missing. The transepts are a step above the nave, the arms are covered with wagon vaults, and have little apses eastwards only marked on the exterior by the windows. At Corneilla-le-Conflent is a similar arrangement, but with two such niches in each transept. On the north side the apse is occupied by the font; above it is a little window, now blocked, and the moulding round the springing of the vault rises over it as a hood-mould. In the north wall near is an aumbry. The south transept has a small window in the south wall. In the eastward apse is an altar and opposite to it a low door into the space once lighted by the external arcade already described, the nearer portion of which was once used as a sacristy, while beyond a rough wall is a stable. The transept arches have two unmoulded orders with a heavy impost moulding.

The apse has the central window blocked and a late one cut in the south side. A reredos has been set up at some time, composed of architectural fragments taken from other parts of the church (Fig. 4). The abacus mouldings of the caps in the lower range are much more elaborate than any others, and the caps and colonnettes closely resemble those of the narthex as well as the remaining portion of the

arcade. The blocked window has two caps of the same kind and shafts without entasis within the arch-opening; at each side is a portion of an arcade on a smaller scale, supported on four colonnettes, two having patterns in low relief carved on them, which also occur at Elne. The other two have moulded caps apparently later in date. The wall surfaces between the carved portions have been roughly painted to imitate coloured marbles, and modern French coloured religious figures added. The altar and *gradini* are in the style of the XVIIth century, and with the shape of the three steps to the sanctuary indicate a restoration in the late XVIth or early XVIIth centuries. At the west end is a gallery above the narthex, now reached by a flight of steps from the nave, which was the monks' choir, an arrangement of Auvergnat origin, and still existing at Issoire, St. Nectaire, and Orcival, as well as in the Cathedral of Vence, a very early church. In that church the complete stalls of 1455–60 with bishop's throne in the centre still may be seen, and upon the lectern of a rather later date the MS. book of anthems lies, left as it was after its last use. At Grasse also there was once a similar choir of the XIIth century.

Serrabona was the most ancient priory of Augustinian canons in the diocese of Elne; the act of foundation is dated the fifth of the Nones of March, 1082, and states that it is in the diocese of Eulalia, Virgin and Martyr of Mérida, to whom the cathedral at Elne is dedicated. The church and the surrounding buildings must have been restored and altered in the XIIth century. There was a reconsecration by Artal 2nd, Bishop of Elne in 1151. The XIth-century church appears to have had no aisles. In the XIIth century the apse was demolished, the building lengthened eastwards, providing room for a transept, and the apse rebuilt. At this time the narthex and southern addition were also made.

An apostolical bull of 1593 united the title and revenues of the monastery to the chapter of the church of Solsona in Catalonia; this may be the date of the later alterations.

Perpignan itself contains but smal remains of its period of prosperity. The nave of S. Jean le Vieux, the oldest building in the city, is now used by the cathedral authorities for storing decorations and framings used on the occasions of ecclesiastical functions and festivals; within it is a doorway which may have belonged to a church of the Xth century, known as "Nostra Senyora dels Correchs." The date of consecration of S. Jean le Vieux is 1025, and there are carvings of the period still remaining about it, though the façade is partially masked by an addition of the XIIIth century, a blind arcade of seven round arches with colonnettes above larger arches resting on corbels; one of these has ornamented mouldings and is pierced by a semi-lunar window. A pier divides the seven arches into groups of four and three, and above it is a rough figure of Christ blessing with two angels by His shoulders set in a hollow of the brick wall.

During the XIth century Perpignan was the habitual residence of the Counts of Roussillon. The cathedral is a spacious single-naved Gothic building of the XIVth to the XVIth centuries, with an interesting iron belfry of 1742, which reminds one of those so frequent in Spanish towns. One of the bells bears the date 1399. Within is an interesting XIIth century font of very unusual design, like a vat tied round with a cord, and several paintings of the XVth century and *retablos* of a later date, in which strong Spanish influence is visible, and in the treasury an early Arab casket of carved ivory is preserved. There are other churches of the XIVth and XVth centuries, and a few late Gothic palaces, among which the Loge de Mer of 1397–1540; the Palais de Justice, with a fine Spanish-looking door with long voussoirs and *ajimez* windows—the Hotel Xanxo, and the Maison Julia, may be mentioned; but most of the buildings have been altered and restored in the most heart-breaking way. The oval ramparts have been swept away and a waste of bricks and newly made roads now surrounds the town, to be transformed into the new quarter which it appears to be the ambition of all French towns to possess. The streets of the city are narrow, but clean, and the shade from the high houses and beneath the trees upon the boulevards along the little River Basse is very pleasant. The castle, which was the palace of the Kings of Majorca, cannot be visited without special permission of the military authorities, but the restore

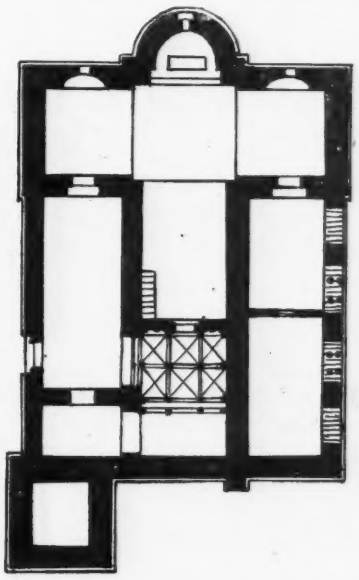


Fig. 3. Plan of Augustinian Priory Church, Serrabona.

has had a free hand, so the loss is not very great. Of the ancient fortifications, only the Castillet remains, isolated and thoroughly restored.

Fig. 2. Narthex, west end of Church, Serrabona.

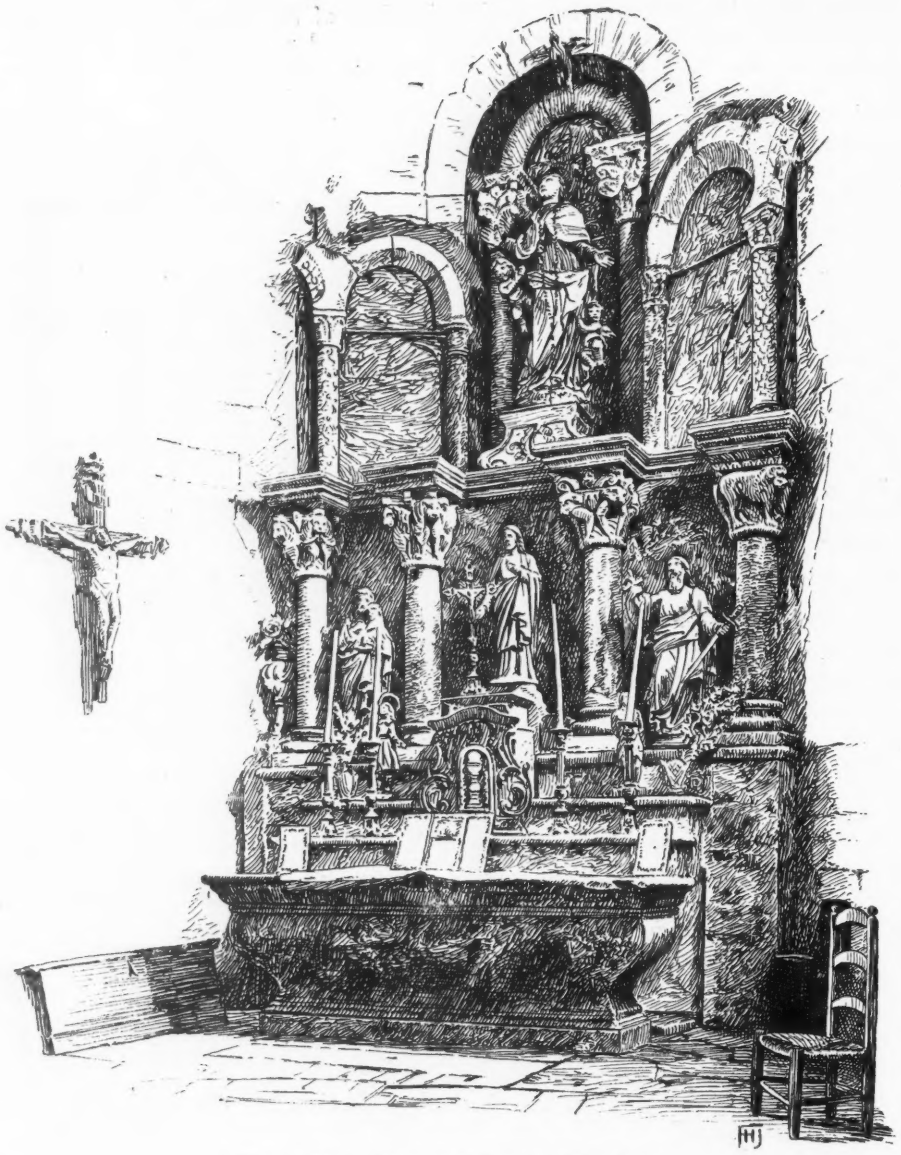


Fig. 4. High Altar and Reredos, Serrabona.

The history of the place shows an early enjoyment of considerable liberty and civic enlightenment, and until Louis XI.'s conquest it was very prosperous. After that event its great prosperity "vanished for ever," M. Vidal says, but the finalblow was dealt by Ferdinand and Isabella in the expulsion of the Jews and the establishment of the Inquisition.

Roussillon extended as far as Salces, at the head of the Étang de Leucate, where a most interesting survival may be seen close to the line, in the shape of a fort, built in 1497, now used as a powder magazine. The place and name are of great antiquity; ancient topographical descriptions mention "Ad Salsulas" among the stations of the Via Domitia, which bound Spain to France, placing it thirty miles from Narbonne. "Villa Salsas" appears for the first time in 951. The "Salsulæ" were two salt springs which rise on the limestone slopes near, the nearer called Font Dama and the more distant Font Estramer. The latter is often mentioned in mediæval deeds; an Act of 1095 gives it as Fons Extrema, meaning on the edge of Roussillon. There was a church consecrated in 1114, but the village and walls were razed to the ground when the existing fort was constructed by a Spanish engineer named Ramirez, and rebuilt farther away. It has a rectangular plan with towers at the angles and bastions in advance of the walls. Its great interest (apart from its good preservation) consists in its being an example of the transition period, when the use of cannon was altering the design of fortifications, a stage of which few instances remain. Vauban repaired it. From the line it appears to be in a perfect state, and is worth the study of anyone who has reasons for wishing to know exactly how fortifications of that period were built and what they looked like.

NOTES.

The Building of New Rome.

WE learn from the *Times* correspondent that a Report upon the proposed new building scheme in Rome has been drawn up by a committee representing the artistic and archæological societies of Rome, the purport of which is a unanimous declaration in favour of the preservation of everything which belongs to ancient Rome, and a practical condemnation of the *Piano Regolatore* to which detailed reference was made in our leading article of December 19. It appears to be supposed that a protest backed by all the most eminent men in art and archæology in Rome can hardly be ignored by the official authorities. It is to be hoped that the result may be to prevent any demolition whatever of historical monuments or remains. Ancient Rome belongs to the whole world, in point of historic interest, and any proposal to interfere with or destroy its remains in the interest of what is called "improvement" will meet with the universal opposition of educated people of all countries.

Architectural and Topographical Society.

THIS Society, which includes in its advisory council the names of Sir Aston Webb, Mr. T. G. Jackson, Mr. E. S. Prior, and other well-known architects, has drawn up a form for filling up with information in regard to ancient buildings in any district, in a systematic manner. The name and definition of the boundaries of the parish come first, and the information about any ancient building within its boundaries is then to be entered under the successive headings:—

Name and use of Building.
Features of Building: Plan.
Structure.
Fittings.
Armoury.
Books of Reference.

To these is added a heading for information, if any, as to "other buildings of architectural interest in this parish." The Society are desirous to get as many as possible of these record forms filled up; any one or any official body which has information to give in regard to an old building is requested to apply for a form of this kind to the Secretary of the Architectural and Topographical Society (Mr. Wilfred Travers, 33, Old Queen-street, Westminster), from whom any required number of forms can be obtained. The collection and putting together of archæological information obtained in this manner must necessarily be a slow process, but if largely entered upon it will result in the formation of a mass of information of permanent value in regard to architectural and archæological antiquities in this country, and therefore we hope that the Society will obtain a good response to its request for the drafting of information in this form.

The Electrification of Fog.

THE recent notices which have appeared in several papers stating that Sir Oliver Lodge's electrification of fog experiments were going to be tried on a large scale have elicited from him a letter to the *Times*, in which he gives a historical *résumé* of what has already been done in this direction. The phenomenon on which the method is founded is the extraordinary clarifying action of high-tension electric discharges on fog or mist or smoke. If a point connected with the electrode of a frictional electrical machine be introduced into a bell jar containing smoke the particles of smoke coagulate, forming clusters, flakes, and streamers, which either fall or cling to the walls of the vessel. Steam is similarly converted into fine rain. Sir Oliver describes the many tantalising experiences he has already had. When his apparatus was ready no fog would come, and when a substantial fog came the apparatus was either out of order or his assistants were not available. He points out that it is more desirable to prevent fogs from occurring in towns by improving the methods of burning fuel than to get rid of them by electrical means when

they do occur. He declines to make himself responsible for the financial aspect of the question, but he says that the experience he has had in applying high-tension discharges to assist the growth of cereals in agriculture has enabled him to devise much more efficient methods. He admits that it is worth while to try experiments at important local centres such as railway stations and harbours. Seeing that these experiments are so successful in the laboratory, we are surprised that they have not yet been tried on a commercial scale. The application of these discharges for producing nitrates, etc., is an everyday engineering operation, and there are now plenty of electricians capable of devising satisfactory fog apparatus.

Steam Pipe Explosions. IN the annual report by Mr. Strohmeyer to the Manchester Steam Users' Association, attention is directed to the recent increase in the number of burst steam pipes. This is a matter affecting architects who are responsible for the installation of steam boilers, engines, and heating apparatus of various kinds. It is not sufficiently recognised that pipe installations are commonly designed so that water can lodge in places whence it cannot be removed without serious risk of explosion. The only really safe way of removing such water is to drain the pipes when there is no steam in them. Unfortunately it often happens that when steam has been shut off the water will not run out, and that the readmission of steam establishes various elements of danger, such as water in contact with steam, rapid condensation, agitated water surfaces, steam pressure in some parts, and vacuum in other parts of the installation. Mr. Strohmeyer points out that the danger is enormously increased if only a small portion of the water has actually run out, for then the re-entering steam may have access to a long surface of water near the top of a pipe causing rapid condensation, while the resulting rush of steam over the water surface will raise waves which when suddenly arrested give water-hammer blows. The only efficient safeguard against explosion in pipes is to fit automatic draining apparatus to prevent the accumulation of water at all times.

Fire Tests of Textiles. A SERIES of tests in July last by the British Fire Prevention Committee was undertaken to ascertain the effect of applying a compound known as "Flameoff" to flannelette, chintz, chiffon, lace curtains, and Madras curtains, and to compare the materials so treated with similar materials in their ordinary state. The treated fabrics were sent to be washed and impregnated to two laundries, the time taken by the latter process being two hours at one establishment and eight hours at the other. From the official report it appears that the materials as delivered from the manufacturers burnt rapidly in every test, while those washed and treated with "Flameoff" were merely charred in sixty-nine tests and burned slightly in three tests, thus demonstrating clearly the value of the treatment in question. The desirability of rendering textiles non-flammable is emphasised by the exciting fires which broke out on December 22 in two large drapers' shops at Portsmouth and Clapham respectively, but fortunately without causing injury to the crowds of women and children who were making purchases in anticipation of Christmas time.

Water Purification by Ozone. A MEMOIR read to the French Society of Civil Engineers by M. L. Borne describes the process of clarification and sterilisation by ozone in operation at Chartres. The author compares the cost of filtration by sand with that of purification by ozone, and points out the advantages that would follow the application of the newer method to the water supply of Paris. We believe that the authorities of that city have already decided to employ ozone for the treatment of river water and water from some other sources regarded as unsatisfactory. Therefore there is reason for hoping that in due course further useful data will be forthcoming as to the ozone process generally, as well as with regard to the most economical method of application. One commendable feature of purification by ozone is that no odour is communicated to the water, the gas rapidly disappearing in consequence of its instability.

Electric Power Stations. THE paper which was read by Mr. Corson to the Institution of Civil Engineers last week is of value to electrical engineers, as it proves clearly that the main cause of the great variation in the fuel consumption per unit generated in various electric power stations is the heat lost during the sequence of operations required to convert the heat energy in the coal into electric power. In 1903 the figures for this country ranged from 3·6 lb. to 15 lb. per unit generated, the consumption at the Blackburn station on which the author experimented being 10 lb. The first rough tests of the various sections of the plant showed that a considerable rearrangement was imperative. The steam-pipe system was overhauled and more effectively drained, making steam separators and driers unnecessary. The steam ring was also discarded, the heat-radiating surface being thus greatly diminished. The whole process of combustion was carefully controlled by instituting periodical flue gas analysis. In this way the fuel consumption was reduced to 6 lb. per unit generated. As further reduction was desirable, an elaborate and careful test was made of all the generating and distributing plant in the works. The test lasted 168 consecutive hours, during which time 230 tons of coal were burnt. The net results show a consumption of 5·15 lb. of coal and a total evaporation of 34 lb. of water per average unit. The tests were carried out with the accuracy rendered possible by recording pyrometers and modern calorimeters. In conclusion the author discusses the waste of heat at each link in the chain of operations and their relative importance. Compared with a modern "power-in-bulk" station, the Blackburn works make a very indifferent thermodynamic performance.

The Ventilation of Flats. A REPORT by Dr. Sykes, the Medical Officer of Health for St. Pancras, calls attention to the obstacle created by the requirements of the London Building Acts in respect of fire protection to the ventilation of industrial dwellings. The regulations to which the report takes exception are that front doors opening upon the staircase shall be automatically closing, and that the fanlights over such doors shall be fixed. We presume these requirements are intended to prevent the staircase from being filled with smoke in the event of fire in any one of the flats. But the result is that no dwelling so constructed can be aired by means of the doors and fanlights, and the only alternative open is to establish through ventilation from one front to another. To provide for this, however, involves the design of dwellings with only two flats on each floor, thereby causing considerable extra and unnecessary outlay. The simple remedy suggested by Dr. Sykes for any possible inconvenience or danger from smoke is to make the staircase more open to the air. We see no reason why this should not be accepted by the County Council. Daily and continuous asphyxiation by stale air is far worse for flat-dwellers than occasional inhalations of smoke at intervals of several weeks, months, or years apart as the case may be.

New York Bridges and Tunnels. TWO BRIDGES are open at present across the East River between New York and Brooklyn, one of these being the fine structure by Roebling, completed in 1883, and the other the Williamsburg suspension bridge, opened in 1903. The Manhattan Bridge, commenced in 1901, also of the suspension type, and the Blackwell's Island cantilever bridge, commenced in 1901, will probably be ready for traffic by the end of the present year. The latter structures do not exhaust the category of works intended to reduce the inconveniences resulting from the geographical situation of Manhattan Island in relation to outlying parts of Greater New York. East River Bridge No. 5 has already been commenced so far as preliminary works are concerned, the site chosen being to the east of the old Brooklyn Bridge, and yet another cross-river communication proposed is the railway viaduct comprising a steel arch of 1,000-ft. span across Hell Gate, separating Long Island City from Upper New York. In addition to bridges, a series of tunnels, completed and under construction, includes the Rapid Transit tunnel, the Pennsylvania Railroad tunnels, and the Belmont tunnels beneath the East River, and the Pennsylvania Railroad tunnels, the New York and Jersey Railroad tunnels, and the Hudson and Manhattan Railroad tunnels under the Hudson River. The facilities mentioned are supplemented by various bridges and tunnels between the banks of the narrow channel known as the Harlem River, and altogether it would appear that New York will be fairly provided with means of ingress and egress before long.

E

Proposed Fifth Building, New York.

THERE is still uncertainty as to the carrying out of the proposed Equitable Assurance Society's building, which, as projected, would be the highest building in the world, at 900 ft. above the street level, embracing sixty stories. According to the *New York Times*, a few of the leading contractors are preparing approximate estimates, which the board of directors will consider. Although only about twenty years or so old, the present building, a substantial structure, is considered out of date, and unremunerative as compared with the latest type of sky-scraper. Messrs. Burnham & Co., of Chicago, are the architects responsible for the plans. The site is bounded by Broadway, Cedar, Nassau, and Pine streets, and the aggregate of the four frontages is 927 ft., the rectangle enclosing about 1⅛ acre in the most valuable quarter of the city. The whole area is proposed to be covered for a height of 470 ft. From the centre of this the tower uprises in three sections, the first about 110 ft. square, rising 180 ft., the second about 60 ft. square for a further 120 ft., and the conical roof rises therefrom for another 130 ft. In order to avoid the new restrictive law for regulating the height of buildings, the plans had to be rushed and filed with the Building Department before the end of the present year. The cubical contents of such a building would be 20 million cubic ft. or thereabouts. The idea of placing these tall towers in the middle of a block instead of on the street frontage has been strenuously urged in the public Press by Mr. Ernest Flagg, the architect of the Singer Building Tower of forty-one stories, which has just been overtopped by the Metropolitan Life Building's tower of forty-eight stories and 740 ft. high—at present the highest building in the world.

"Conservatoire de Musique," Paris.

THE Department of Public Instruction in France has commissioned M. Blavette, the architect, to make a study of a project for the permanent installation of the Conservatoire de Musique in the former College of Jesuists in the Rue de Madrid and adjoining the Rue de Rome, Paris. According to M. Blavette's scheme, the collection of the museum of musical instruments will be installed on the ground floor; the classes for study will be provided for on the first and second floors; and the library will be installed in a new building to be erected in the central court, which will also contain two theatres for the practice of opera and of declamation. In addition to this, a large concert-hall is to be erected on the site of the buildings bordering the Rue d'Edinbourg.

Colchester Technical Institute Competition.

UNDER the head of "Competition News" we give the result of this one, from which it appears that as all the premiated designs selected by the Assessor are above the stipulated limit of cost, the committee cannot accept them for execution, and are considering the advisability of accepting another one which comes, in their judgment or according to the competitor's statement, within the stipulated cost. The estimated amounts by the authors of the three premiated designs are respectively 16,500*l*., 14,201*l*., and 12,800*l*.; the stipulated limit, we are informed by the Secretary, was 10,000*l*. Unless there is some further explanation forthcoming, it can hardly be denied that the committee are justified in their proposed action, though they may possibly have to regret it afterwards. The Assessor in the case is an eminent and highly respected architect, and he may have a good reason to give for his selection; but as a general principle we cannot help feeling that it is the duty of competitors to keep within the stipulated limit of cost, and the duty of an Assessor to rule out those who obviously and professedly exceed it.

The late Mr. Fawcett.

MANY members of the architectural profession will hear with regret of the death of Mr. W. M. Fawcett, of Cambridge, an architect who united professional ability with amiability of character and remarkable business capacity. Mr. Fawcett took great interest in the affairs of the Institute, at the meetings of which he was a frequent attendant and a useful adviser in matters of importance to the profession. Some members of the Institute will still retain a pleasant recollection of their visit to Cambridge at the invitation of Mr. Fawcett, who acted as host and *cicerone*, on the occasion, to a large party of his professional colleagues. Some account of Mr. Fawcett's life and work will be found under the head of "Obituary" on another page of this issue.

The late Mr. Gruning.

SCARCELY had we written the above Note than we learned with regret of the death of another well-known member of the Institute, Mr. E. A. Gruning, than whom there was no more familiar figure or more constant attendant at the meetings; and as a member of the Council he was almost a permanent institution, his administrative capacity and general courtesy rendering him a most useful and valuable member of that body. As in the case of Mr. Fawcett, we refer our readers to our "Obituary" column for full particulars in regard to Mr. Gruning's professional career.

SOME AUSTRALIAN AND NEW ZEALAND TIMBERS.—I

IN this article we present notes on some of the chief varieties of timber grown in Australia and New Zealand and available for export. Being intended as a convenient summary for architects, engineers, and contractors, all facts and data are given in condensed form, so that they can be more easily used for purposes of reference.

NEW SOUTH WALES.

For the purpose of this article the chief timbers of New South Wales may be classified as follows, but it should be noted that the Colonial designations here employed afford no clue to the actual character or botanical names of the living trees:—

I.—Ironbarks.
II.—Stringybarks.
III.—Pale Hardwoods.
IV.—Red Hardwoods.
V.—Turpentine and Brush-box.
VI.—Cedar Beech and Pine.
VII.—Oaks.
VIII.—Black Bean, Myall, and Blackwood.
IX.—Miscellaneous Brush Timbers.

In the subjoined notes we described briefly the characteristics of various useful timbers which are or might advantageously be imported into the United Kingdom, giving their botanical names, and stating the purposes to which they are most frequently applied.

I.—Ironbarks.

"White or Grey Ironbark" (*Eucalyptus paniculata*) is exceptionally hard and cuts almost like horn. Weight about 73 lb. per cubic foot.

Red Ironbarks of the narrow-leaf (*Eucalyptus crebra*) and broad-leaf (*Eucalyptus siderophloia*) varieties are valuable timbers, also very hard, although inferior to the best white or grey ironbark. Weight about 73 lb. per cubic foot.

Uses. Ironbark is employed in bridge-building, for sleepers, posts, waggon and carriage building, and for beams and joists, especially where great strength is required.

II.—Stringybarks.

"White Stringybark" (*Eucalyptus eugenioides*) and "Red Stringybark" (*Eucalyptus capitellata*) are of fissile character, both of them being durable and standing well in the ground. *Uses:* Stringybark is largely employed in general building construction, for palings, and for railway sleepers.

Another variety of Stringybark, known as "Messmate" (*Eucalyptus obliqua*), is found in the southern mountain ranges, but from its habitat is never likely to be exported to any considerable extent.

III.—Pale Hardwoods.

"Mountain Ash" (*Eucalyptus obliqua*) is an Alpine variety of stringybark yielding a pale, fissile, tough, and elastic timber of superior quality, but not very durable in the ground or where exposed to the weather. Weight about 55 lb. per cubic foot. *Uses:* Building construction, and purposes where toughness combined with lightness is desirable.

"Blackbutt" (*Eucalyptus pilularis*), a strong, durable, and fairly fissile timber, ranking with Tallow-wood next to Ironbark. Weight about 65 lb. per cubic foot. *Uses:* Building construction, bridge decking, carriage framing, railway sleepers, and street paving.

"White Mahogany" (*Eucalyptus acmenoides*), a pale-coloured, tough, and hard timber, similar to Tallow-wood in appearance, but without greasiness, and considered by some to be more durable than either Ironbark or Box. The name of this timber owes its origin simply to the fact that the bark of the tree was thought to resemble that of the true mahogany. It is a timber that deserves to be better known. *Uses:* General building work, piles, posts, and sleepers.

"Tallow-wood" (*Eucalyptus microcorys*), a heavy, strong, and durable timber of greasy nature, not readily split, not liable to shrink, planing and turning well. After cutting the colour changes from pale yellow or red to a light brown. Weight about 71 lb. per cubic foot. *Uses:* Owing to its greasy nature tallow-wood is specially suitable for ball-room floors, and being non-flammable it is much favoured in building construction. Largely used for bridge decking, piles, railway sleepers, fencing posts and rails, and is one of the best woods for street paving.

"Spotted Gum" (*Eucalyptus maculata*) is a tough, durable timber, pale yellowish brown in colour, with a pleasing wavy grain. It bends well even when cold. Weight about 58 lb. per cubic foot. *Uses:* House building generally, bridge decking, and wood paving, framing, poles, shafts, and spokes in carriage building, handles and parts of agricultural implements.

"Grey Box" (*Eucalyptus hemiphloia*), a very tough, hard, non-fissile timber of great strength, very durable in the ground. Colour, very pale brown. *Uses:* Employed for girders, piles, sleepers, and purposes where a strong and durable wood is required, and for

poles, shafts, handles, wheel cogs, and details necessitating a tough variety of timber.

IV.—Red Hardwoods.

"Red Mahogany" (*Eucalyptus resinifera*) resembles Jarrah in appearance, and is a handsome timber of deep colour, very durable, and as hard as ironbark. It turns and works well. *Uses:* General building work, fencing, street paving, large turned work, and heavy furniture.

"Grey Gums" (*Eucalyptus punctata* and *propinqua*) so much resemble Ironbark in appearance that only an expert can discriminate between the two timbers. They are remarkably durable and very hard. Weight about 66 lb. per cubic foot. *Uses:* Same as Ironbark, except for long beams.

"Forest Red Gum" (*Eucalyptus tereticornis*), a hard, cross-grained, heavy, and durable timber of deep red colour, possessing considerable resistance to the *teredo*. Weight about 68 lb. per cubic foot. *Uses:* Piles, foundations, sleepers, fencing, paving, and general building construction.

"Sydney Blue Gum" (*Eucalyptus saligna*) is a straight-grained wood comparatively easy to work. Colour, pale red. Weight about 66 lb. per cubic foot. *Uses:* Building and joinery, waggon building, and paving.

"Woollybutt" (*Eucalyptus longifolia*) is a dark red timber, rather heavy, and somewhat like Red Ironbark in appearance. It is very durable in contact with the ground. *Uses:* Building, fencing, flooring railway waggons, and wheelwrights' work.

V.—Turpentine and Brush Box.

"Turpentine" (*Syncarpia laurifolia*) is a brown or dull-red timber, with considerable resistance to decay in the ground and the attack of marine worms. It is very difficult to burn. Weight about 66 lb. per cubic foot. *Uses:* Piles for bridges, wharves, and jetties, fencing, beams, and railway sleepers. As the resistance of the wood to marine worms is due to a layer of oleo-resin inside the bark, piles of this wood ought always to be driven with the bark intact.

"Brush Box" (*Tristania conferta*) is remarkably tough, strong, and durable, its colour being a pale-brownish-pink, turning greyish on exposure. *Uses:* Chiefly local for timber log rails, bullock yokes, and tool handles.

VI.—Cedar Beech and Pine.

"Red Cedar" (*Cedrela australis*) resembles in appearance Honduras mahogany, but is only about half the weight of that wood. It darkens with age, and can be obtained with figured grain of great beauty. It is soft, easily worked, and durable. Weight about 28 lb. per cubic foot. *Uses:* House joinery, furniture, and railway carriage panels.

"Rosewood" (*Dysoxylon Lessertianum*) is named from the odour of the timber when freshly cut. It is of reddish colour, well figured, and easily worked. Weight about 50 lb. per cubic foot. *Uses:* Furniture, cabinet work, turnery, carving, house joinery, interior work in railway carriages, organ building, and all purposes where timber a little harder than soft wood is required.

"White Beech" (*Gmelina Leichhardtii*), a variety of timber harder and more durable than pine, the texture usually plain, and excellent to work. Weight about 53 lb. per cubic foot. *Uses:* Floor boards, house joinery, furniture, picture frames, carving, railway carriage roof ribs, vats, and casks.

"Moreton Bay Pine" (*Araucaria Cunninghamii*) is the staple soft wood of New South Wales. Weight about 54 lb. per cubic foot. *Uses:* Flooring, lining, and ceiling boards, packing cases, and all purposes where an easily worked soft wood is required.

"Cypress Pine" (*Callitris*) is a generic term under which are included the Red or Black Pine (*C. calcarata*), and Murray or White Pine (*C. robusta*). The wood has an odour akin to that of sandal-wood and consequently is obnoxious to white ants and other insects. Planks of the Red or Black Pine frequently exhibit grain of such gorgeous character that care is necessary in using that wood for decorative purposes. The prevailing colour of the figure is brown of various shades. Weight about 50 lb. per cubic foot. *Uses:* Building purposes, decorative panels in railway carriages, and telegraph poles.

VII.—Oaks.

"Silky Oak" (*Grevillea robusta* and *Orites excelsa*) is a fissile, light-coloured timber with an oak-like grain. Weight about 36 lb. per cubic foot. *Uses:* Furniture, wainscotting, panels, picture frames, and casks.

"She-Oaks" (*Casuarinæ*) of various species differ considerably in depth of tint and in the distribution of the oak-like grain to which this wood owes much of its beauty. Most She-Oaks are fissile, hard, and heavy, some of them being very tough. The darker varieties are of a full red mahogany colour with dark red veins, and the grain is like that of the evergreen oak (*Quercus ilex*). *Uses:* Cabinet work, ornamental turnery, shingles, staves, tool handles, and bullock yokes.

VIII.—Black Bean, Myall, and Blackwood.

"Black Bean" (*Castanospermum australe*) is a dark-coloured, close-grained, durable wood, very like walnut in appearance. It can be dressed with great facility, and takes a good polish. Owing to its greasy nature, this timber is not suitable for work wherein glue is used. Weight about 40 lb. per cubic foot. *Uses:* Furniture, cabinet work, railway carriage fittings, and gun-stocks.

"Myall" (*Acacia*) of various species are plentiful in many parts of the State, providing heavy, dark-coloured timber of great hardness. *Uses:* Turnery work, spokes for gun-carriages.

"Blackwood" (*Acacia melanoxyon*) and Mountain Hickory (*Acacia penninervis*) are hard, close-grained timbers of ornamental appearance, dark brown to black in colour. Weight about 45 lb. per cubic foot. *Uses:* Furniture, carriage building, and railway carriage top framing.

IX.—Miscellaneous Brush Timbers.

"Tulipwood" (*Harpullia pendula*), a handsome close-grained wood marked with different shades from black to yellow, and like olive wood in appearance. It is tough and very durable. *Uses:* Cabinet work, door panels, dadoes, and billiard tables.

"Muskwood" (*Olearia argophylla*) is beautifully figured, something like bird's-eye maple. It should be found an admirable material for veneers.

WESTERN AUSTRALIA.

The total wooded area of Western Australia is estimated at nearly 100 million acres, the extent of merchantable timber being approximately 20 million acres. The remainder of the wooded area is covered by trees of the smaller classes, chiefly available for local uses.

The principal timbers of the State are briefly described in the following notes:—

"Jarrah" (*Eucalyptus marginata*), a wood of reddish colour, very hard and dense, generally straight in the grain, with more or less interlocking fibres and little sapwood. As previously pointed out, this timber and the Red Mahogany of New South Wales are of similar appearance. It is very durable in contact with wind, water, and earth. Weight about 70 lb. per cubic foot. *Uses:* Railway construction, sleepers, marine and engineering works, building construction, joinery, furniture, and street paving.

"Karri" (*Eucalyptus diversicolor*), a heavy, tough, dense, and elastic timber very similar to Jarrah in appearance. Before the timber is cut Karri and Jarrah can easily be distinguished, as the bark of the former is smooth, clean, and light-coloured, while that of the latter is rough, broken, and dark in colour. After having been cut the two woods may be differentiated by burning a splinter of each. Jarrah generally burns to a firm black ash, and Karri to a woolly white ash; also when the flame of the burning splinter is blown out Jarrah quickly turns black, while Karri glows for some little time. Weight about 63 lb. per cubic foot. *Uses:* Railway car and waggon frames, bridge timbers and flooring, piles, and street paving.

"Tuart" (*Eucalyptus gomphocephala*), a cream-coloured wood, very hard, dense, and interlocked in grain. It is one of the strongest and toughest timbers grown in the State, but supplies are somewhat limited. Weight about 70 lb. per cubic foot. *Uses:* Framework of railway waggons, bridge supports and decking, wheelwrights' work, particularly where special strength and hardness are necessary.

"Blackbutt" (*Eucalyptus patens*). Similar to the Blackbutt of New South Wales. Weight about 65 lb. per cubic foot.

"Wandoo" (*Eucalyptus redunca*), locally known as White Gum, is brownish red in colour, very hard, dense, strong, and durable. Weight about 70 lb. per cubic foot. *Uses:* For railway sleepers it is considered equal to Jarrah, and is used for piles, bridge and wharf construction, wheelwrights' work, fencing, and miscellaneous purposes.

"York Gum" (*Eucalyptus loxophleba*), reddish in colour, exceedingly hard, dense, and tough. Weight about 68 lb. per cubic foot. *Uses:* Wheelwrights' work and farming purposes.

"Red Gum" (*Eucalyptus colophylla*), a timber of yellowish-red colour, splitting readily, fairly hard and dense, but frequently intersected by gum veins which impair its value for structural purposes. It is not very durable underground. Weight about 63 lb. per cubic foot. *Uses:* Fencing, tool handles, and wheelwrights' work.

Among miscellaneous timbers may be mentioned Sandalwood, exported to countries of the far East; Yate, used locally for farming purposes; Morrell Gum, Salmon Gum, and Gimlet, used for mining work and general purposes; and Jamwood, a very suitable material for fencing.

TASMANIA.

Considering the small area of the island, Tasmania is wonderfully rich in timber. With the exception of the *Fagus gunii*, an Alpine variety of beech, all the forest trees of the State are evergreens. About fifty varieties of trees indigenous to the island rank as timber trees yielding hard and soft woods for structural purposes, cabinet-making, and decorative work.

The principal varieties of timber available for export and their uses are briefly described below.

I.—Hardwoods.

"Blue Gum" (*Eucalyptus globulus*). This timber should not be confounded with similarly named varieties growing on the mainland of Australia. When cut and planed its colour ranges from golden yellow to purplish-brown or buff. It is very durable, of high specific gravity, hard, and very close-grained. Weight 52-68 lb. per cubic foot. *Uses:* Owing to its high specific gravity, its capacity for withstanding hard driving and its comparative immunity from the attack of the teredo, Tasmanian Blue Gum is largely used for piles. It is also used largely in bridge and wharf construction, building and joinery, for railway sleepers, and in railway waggon and wheelwrights' work.

"Stringybark" (*Eucalyptus obliqua*) is the variety known in New South Wales as "Messmate," and occurs generally throughout Tasmania. It varies in colour from light brown to straw colour. Being open and free in grain, very durable, and of moderate weight, the timber is preferred for many purposes to Blue Gum. It polishes well, and very much resembles English oak in appearance. Weight 48-66 lb. per cubic foot. *Uses:* Building and joinery work, piles, bridges, and wharves, railway sleepers, mine supports, fencing, and woodpaving. Very suitable for cart and van construction.

"Swamp Gum" (*Eucalyptus regnans*), sometimes termed Ash, is identical with the Mountain Ash of Victoria, but not with the variety of Eucalyptus called by that name in New South Wales. Swamp Gum is of low specific gravity, of a light brown colour, works and polishes well, the grain being open, free, and sparkling. It is not durable in the ground or exposed to the weather. This wood has been discredited because it has often been sold for Blue Gum and Stringybark, and applied to purposes for which it is unfit. Weight 48-54 lb. per cubic foot. *Uses*: House joinery and fittings, palings, and packing cases.

"Gum-Top Stringybark" (*Eucalyptus hæmastoma*), a species of the Swamp Gum variety, but closer in grain, cleaner, and more free from defects. It is light and tough, can easily be split, and is a valuable hardwood for any purpose not involving exposure to the weather, or requiring exceptional strength. Weight 48-51 lb. per cubic foot. *Uses:* House framing, floor boards and joinery, coach builders and wheelwrights' work, cask staves.

II.—Ornamental and other Timbers.

"Blackwood" (*Acacia melanoxylon*), the same as the Blackwood of New South Wales, but not existing in quantities sufficient for export on a large scale. Weight 37-40 lb. per cubic foot.

"Beech" or "Myrtle" (*Fagus Cunninghamii*) is of two kinds, one resembling English beech and the other a white soft and fissile wood. The harder variety is a strong, close-grained timber of brownish tint, taking a good finish, fairly durable in the open air. Weight 39-54 lb. per cubic foot. *Uses:* Flooring, dadoes, turnery, furniture, wheelwrights' work, and casks.

NEW ZEALAND.

According to the Survey Department the area of forest lands in New Zealand is rather more than 20 million acres. The forests vary greatly in character according to locality, and, although rather mixed, may be roughly divided into four districts where the predominating timbers are Kauri, Totara, Red Pine, and Beech.

The chief timber trees of the State comprise eighty-six kinds, divisible into three classes. (1) Those of large dimensions and great durability, suitable for building and engineering construction; (2) those of large dimensions and moderate durability, suitable for general building purposes; and (3) those of small dimensions suitable for special purposes.

Kauri is at present the only New Zealand timber exported to any considerable extent, but several other varieties could be shipped at low prices if proper arrangements were made.

In the subjoined notes we direct attention to the woods deserving the consideration of consumers in the home market as well as of exporters in New Zealand.

"Kauri Pine" (*Agathis Australis*), a sound timber of rich colour, fine grain, and almost perfectly free from shakes and faults. It is strong, tough, elastic, durable, and easily worked. Obtainable in planks up to 20 ft. long by 5 ft. wide. *Uses:* Building construction, including roofs, dadoes, panels, moulding, doors, flooring, and all kinds of joiners' work, church furniture, street paving, and ship decking.

"Mottled Kauri" is a figured wood in demand for cabinet and ornamental work, both in the plank and in the form of veneers. Weight about 39 lb. per cubic foot.

"Totara" (*Podocarpus totara*), an exceedingly durable timber of rich red colour with very straight, smooth, and silky grain, very easily worked, and never warping or twisting. The natural oil contained in this wood protects it against the *teredo* and imparts a glossy appearance, which, with its fine colour and grain, renders Totara suitable for ornamental purposes. Weight about 35 lb. per cubic foot. *Uses:* Building construction, joinery, cabinet work, piles, wharves, and bridges, woodpaving, telegraph poles, and railway sleepers.

"Matai," or "Black Pine" (*Podocarpus spicata*) is usually of a bright cinnamon red, and occasionally of a brownish tint, with close, smooth, and silky grain. The wood contains an oil which contributes to its pleasing appearance and remarkable durability. It hardens with exposure to the weather. Weight about 40 lb. per cubic foot. *Uses:* Flooring, especially for ballrooms, fencing posts, bridgework, railway sleepers, and woodpaving.

"Westland Pine" (*Dacrydium westlandicum*), also known as Silver Pine, is a strong, tough, and very durable wood, of straight and even grain, highly resinous, shrinking very little in seasoning, and taking a fine polish. It stands well in the ground and is equal to Totara in resisting attack by the *teredo*. A mottled variety occasionally found is of great beauty. *Uses:* Marine structures, railway sleepers, woodpaving, and building work.

"Puriri" (*Vitex littoralis*), a variety of teak, excessively strong, hard, dense, and heavy. Weight about 60 lb. per cubic foot. *Uses:* Shipbuilding, and work where great strength and durability are required.

"Red Birch" (*Fagus fusca*), a red coloured wood, straight, even in grain, compact, and of great strength, toughness, and durability. Weight about 39 lb. per cubic foot. *Uses:* Building and engineering construction, piles, railway sleepers, furniture, paving, fencing, and coopery.

"Black Maire" (*Olea Cunninghamii*), one of the strongest timbers known, very durable, heavy, dense, tough, and close grained, easily worked, and taking a good finish. It is of deep brown colour, the heartwood streaked with black. Weight about 72 lb. per cubic foot. *Uses:* Bridges, wharves, piers, and landing stages, railway carriage frames, large engraving blocks, cabinet work.

"Rata" (*Metrosideros lucida* and *robusta*), two species of timber commonly designated "ironwood." It is red in colour, hard, dense, heavy, very strong, and astonishingly durable. Obtainable in logs up to 50 ft. long and up to 4 ft. square. Weight about 65 lb. per cubic foot. *Uses:* Wheelwrights' work, shipbuilding, mill gearing, railway sleepers, railway carriages, machine beds, supports for bridges and wharves, and work where great strength is required.

"Rimu," or "Red Pine" (*Dacrydium cupressimum*), a deep red wood with dark or light markings. It is of silky texture, takes a high polish, and many of the trunks are richly figured. In strength it is nearly equal to English oak. Weight about 37 lb. per cubic foot. *Uses:* House building, ornamental roofs, church work, cabinetmaking, railway sleepers, and woodpaving.

"Kahikatea," or "White Pine" (*Podocarpus dacrydioides*), a hard, dense, tough, and strong wood free from knots or faults, easily worked, and takes a high polish. In colour it is nearly white, sometimes with a yellowish stain. Weight about 30 lb. per cubic foot. *Uses:* Furniture, joinery, casks, packing cases, and construction under cover.

"Miro" (*Podocarpus ferruginea*), a straight, even-grained, hard, and elastic timber of great strength. Not very durable in contact with the ground or exposed to the weather, but capable of considerable resistance to attack by the *teredo*. The heartwood is dark and irregularly shaped. It is less easily worked than Kauri or Rimu. Weight about 40 lb. per cubic foot. *Uses:* Beams, joists, and marine piles.

"Rewarewa," or "Honeysuckle" (*Knightia excelsa*), a non-combustible timber, yielded by a tree growing to 100 ft. high by 3 ft. in diameter. This wood is finely marked, the figure sometimes resembling lacework, while other parts are like tortoiseshell in appearance. The use of oil, grease, or varnish on finished surfaces spoils the marking by absorption. Therefore Honeysuckle should be employed unpolished or treated only with French polish. Weight about 49 lb. per cubic foot. *Uses:* Flooring, mantelpieces, art joinery, furniture, picture frames, and decorative work generally.

COMPETITION FOR NEW PUBLIC LIBRARY, MIDDLESBROUGH.

PARTICULARS of this open competition have been issued in accordance with the advertisement that has appeared in the *Builder*.

The conditions appear to promise a satisfactory competition. A professional assessor is to be appointed, and his decision as to the award of premiums is to be final. Although it is not expressly so stated, it is implied that the Borough Council will select one of the three premiated designs for execution. The area of the site is ample, the sum allowed for the cost, 12,000*l*., is sufficient, and the date for reception of designs, March 31, 1909, gives plenty of time for thorough study of the problem and careful preparation of drawings.

The accommodation required is clearly expressed in the conditions, and the situation on the site is specified of the most important elements of the plan, the General Lending and Reference Libraries and the General News-room. The only point of importance not made clear is whether the Lending Library is to be on the "indicator" or "open access" system, but reading between the lines of the conditions, the former appears to be contemplated by the Library Committee. Intending competitors will of course make inquiry on this point for definite information.

We are pleased to notice that this Free Library appears to be intended to be of real value, for the space allotted to the Reference Library is equal to that given to the Lending Library and greater than to the News-room, and in addition there is to be a Law Library and a Patents Library, so that it is evident that the Library Committee mean to make this building one for serious study rather than, as are too many Free Libraries, merely a depot for the lending of novels.

The site is L shaped with frontages to three roads and the customary north-country back passage at the rear, so that except at one short end it is entirely isolated. It may also "be assumed to be level," and as the area is generous, there is no difficulty on the score of site.

The drawings required to be furnished by competitors are plans of each floor and roof, elevations to each street and not less than three cross sections all to $\frac{1}{8}$ in. scale. No perspective.

Drawings are to be sent in anonymously, without mottoes, and canvassing of members of Council or Committee will disqualify, so that, as far as can be judged from the conditions, this competition will be fairly and squarely conducted.

It is perhaps open to question whether the Committee have not, by the very precision of the conditions, too much fettered the ingenuity of competitors, and so deprived themselves of the advantage of suggestions possibly superior to those from which they have on general lines formed their own conception of the most desirable arrangement. Certainly one of their stipulations is more than dubious, that the Reference Library should be entirely lighted from the roof without glass ceiling lights. Such an arrangement admittedly gives good lighting in ordinary weather, but it means also cold down draughts and darkness when snow is falling. In summer heat, rooms so lighted are apt, without special precautions, to become unbearably hot.

COUNCIL SCHOOL, PENMACHNO.—The Carnarvonshire Education Committee have erected a Council school at Penmachno. The total cost of the erection amounted to 4,000*l*. The building was designed by Mr. R. Lloyd Jones, the County Architect, and is intended to accommodate 240 scholars.

THE CORSI COLLECTION OF MARBLES, OXFORD.

FROM A CORRESPONDENT.

UNIQUE among collections is one exhibited in the University Museum at Oxford bearing the name of Corsi.

This collection was the outcome of many years of patient labour and thought on the part of the lawyer Faustino Corsi of Rome, who completed it in 1825 and sold it to S. Jarrett, a fellow of Magdalen College. Mr. Jarrett in 1828 presented it to the University of Oxford. From that time until recently the collection was practically lost to sight, but some years ago its value and importance from an archæological as well as geological point of view was recognised, and the collection is now to be seen in five large glass-covered cases near the entrance of the Museum.

To duplicate this collection at the present time would be an impossibility, as the rules regarding the preservation of the ancient ruins in Rome have become so much more rigorous within the last century, and moreover many of the marbles were rare even in Corsi's time.

The use of marble for decorative purposes, from the earliest times down to the present day, is represented by the 1,000 specimens of the Corsi Collection, all polished and of a good size for study—$5\frac{3}{4}$ in. by $2\frac{7}{8}$ in. by $1\frac{3}{8}$ in. There are specimens of the yellow and white banded or clouded alabaster (carbonate of lime, not the true alabaster, which is a sulphate of lime) of a faint translucency, used in Egypt from pre-dynastic periods for vases, bowls, and sarcophagi. The same alabaster was employed in the Temple of the Sphinx and in the Temple of Kephren at Gizeh, and in later times was highly valued by the Greeks and Romans (by the latter more especially, according to Pliny and other writers). The toiling Israelite may have worked in the alabaster quarries.

There are slabs of the green conglomerate-breccia found near Hammarmat and elsewhere in Egypt, of which the celebrated sarcophagus was made which was at one time supposed to have contained the body of Alexander the Great. This stone is frequently found in Roman ruins, and has a dark green ground-mass containing fragments of greenstone, porphyry, marble, serpentine, slate, and gneiss. The fragments are red, purple, and black, but the predominating colour is green.

The collection contains a fine series of specimens of the so-called "porphyry," a diorite or andesite with a deep purple-red ground, spotted thickly with white or pinkish white. This stone was employed by the Egyptians, but was still more popular with the Romans, to whom it was known as "Lapis Porphyrites" and also as "Stone of Rome." It was the favourite stone of the emperors, and Constantine the Great is said to have been buried in a tomb of it. The most wonderful works in this imperial stone are the elaborately carved sarcophagi of the Empresses Helena and Constantia in the Vatican. There are columns of it of a single piece, 42 ft. long, in the Mosque of St. Sophia; and Paul the Silentiary, in his description of the latter, says, "And many stones there stand out and shine; star-spangled porphyritic stones, which once loaded down with their weight the river barges of the mighty Nile."

In Gothic times "porphyry" was sawn up into thin plaques for making "Opus Alexandrinum" for pavements. Septimius Severus is said to have carried an urn of this stone with him when he travelled in England, in which he intended to have his ashes deposited.

Among other well-known Egyptian stones is the rose granite of pre-dynastic employment, to be seen in many cities of the world at the present time; also the "Thebaic Stone" of Pliny, described by the Greek physician Discorides, and used by the ancients for grinding the ingredients used for preparations for the eyes.

The Greek marbles are of special interest, for marble was the indispensable material of all their architecture and sculpture, and it is to the Greeks that we owe the art of marble decoration.

"Variegated marbles, in my opinion, were first discovered in the quarries of Chios," says Pliny, and Theophrastus describes these marbles still earlier. The quarries were worked as early as 600 B.C., if not before, and it was on the Island of Chios, according to tradition, that the art of sculpture in marble was supposed to have been invented by Melas and his family.

The Marmor Chium" ("Porta Santa") of the Romans was employed to a large extent in Rome, especially during Trajan's reign; and of it are the door-jambs of the four great basilicas of Rome. This marble is often monochrome, pink, and meaty-looking red; also light and dark grey, with reticular networks of yellow or red. It is sometimes brecciated, the ground of a reddish hue and fragments grey.

The collection includes several specimens of the famous Carystian marble, which shows bands of different shades of green on a white ground. Sometimes the bands are parallel, and again they are wavy and distorted, often dislocated. It is said that because the marking of this marble resembles the waves of the sea, Agrippa, in dedicating the temple to Neptune, ornamented it with Carystian marble. Great quantities of this marble are used in St. Mark's at Venice.

Among other Greek marbles is that from Mount Hymettus, which was valued by the Romans, as one can judge from the following verse from Horace:—

> "Within my dwelling you behold
> Nor ivory, nor roof of gold;
> Here no Hymettian rafters weigh
> On columns from far Africa."

(The last line refers to the famous Numidian marble.) There are twenty columns of Hymettian in San Pietro in Vincoli and forty-two at Santa Maria Maggiore in Rome! The Meleager at Paris is of the same material.

There are specimens in the Corsi Collection of Lapis Atracius ("Verde Antico") from Thessaly, which is described by Paul the Silentiary, who ends by saying, "It exhibits, in short, a combination of beauties," which is, indeed, the case. The ground of this marble is green, varying in shade; the fragments, which are mostly angular, are greenish-black, and white calcite is conspicuous throughout the whole. The rock is a breccia of white calcite, green talc, and serpentine. It was employed in the Erechtheum at Athens, and was highly valued in Rome.

The most noted of all Greek marbles, that from the Island of Paros, is represented by two specimens. The beauty and purity of this white statuary marble has long been recognised, and it is doubtful whether it can be surpassed by any other known to-day. It was used by the most celebrated of Greek sculptors; for example, by Scopas and Praxiteles in the building of the tomb of Mausolus. The Venus de' Medici, Pallas of Velletri, and Capitoline Venus are all of this beautiful material.

The statuary marble of next importance is the Marmor Pentelicum of the Romans, which Pausanias describes, giving innumerable examples of it. This marble is usually of finer grain than the Parian, but sometimes shows minute specks of brown.

Scopas and Praxiteles employed it for the Parthenon, and it was also used for the Temple of Castor and Pollux at Rome.

There is a specimen of alabaster (correctly so called) from the neighbourhood of Pisa, translucent and pale yellow or cream-coloured. This stone was used extensively by the Etruscans for their burial urns, which were rectangular in form, with sculptured figures in high relief on all sides and a recumbent figure on the cover.

There are specimens in the collection o nearly all the building and decorative stones used in Rome, from the homely stones of the early Republic to the gorgeously stained and coloured marbles of the Empire, which were brought for the most part from localities thousands of miles distant. There is a good specimen of the Lapis Tiburtinus, one of the first building stones used in Rome, which came from Tivoli and was employed for sarcophagi and other purposes before the introduction of marble. Of it the great Coliseum was constructed; a sufficient proof of its durability. There is also the Lapis Silex, a basaltic lava used for paving roads. Livy tells us that the censors Q. Fulvius Flaccus and A. Postumius Albinus ordered that the Roman roads should be paved with silex. It was hewn in polygonal pieces and fitted together with great precision. The Appian Way and nearly all the Roman roads were paved with this stone.

There are a great number of slabs from Carrara and the vicinity. The white statuary marble from Carrara was called by the Romans Marmor Lunense, and has been worked since the beginning of the Christian Era, if not earlier. The "Founder and Restorer of all temples," Augustus used the Carrara marble in great quantities. The Apollo Belvedere is of this stone, as also the Arch of Constantine; also many works of Michelangelo, who spent months at a time at Carrara choosing his material. Some of the coloured varieties from the vicinity were employed by Louis XIV. in his palace at Versailles.

The red and yellow Verona marble is well represented by thirty or more slabs; the same marble used in the great amphitheatre of that city and used to-day in quantities in Venice.

Of other marbles used in Rome is the Marmor Numidicum, of which there is a splendid series in the Museum, from the palest of ivory tints to deep yellows and flesh-tinted marbles, which are described by Paul the Silentiary as "those that the Libyan sun pouring down his golden rays tinges with hues of saffron." Signor Boni is led to believe, from pieces of Numidian marble or "Giallo Antico" found in the sacrificial or expiatory stratification under the Niger Lapis, that this marble was brought to Rome as early as 200 B.C. The columns of the Arch of Constantine and of the Pantheon are of "Giallo Antico."

The Corsi Collection has in it a fine series of fossiliferous marble both ancient and modern, also serpentines, granites, lavas, and a superb collection of jasper, agates, and other ornamental stones, most of which were known to and employed by the Ancients.

The collection is well worth a visit, both to the archæologist and geologist. Specimens of marble and other decorative stones are constantly being added to the collection, owing to the interest it has awakened on the part of those who visit it. M. W. P.

COWDRAY HOUSE.

COWDRAY HOUSE, aforetime the seat of the Montague family, stands a little to the east of the ancient borough of Midhurst. It has long been uninhabited and uninhabitable, for the house and its invaluable contents—its wonderful art treasures and rare books and MSS.—were devastated and almost wholly destroyed by fire. Somewhere about a hundred years back Cowdray House rose a stately mansion of notable and beautiful antiquity; to-day it has all the appearance of a time-worn, tempest-shattered ruin.

So far as can be traced, the Bohuns were the founders of Cowdray House. Knights' fees were created by King Henry I. in favour of Savaric de Bohun over land in Midhurst, which had then formed part of the Barony of Arundel ever since the Norman Conquest. It seems probably that these early Bohuns

erected and inhabited a stronghold near Midhurst; and the remains of that stronghold are still traceable there on a hill called St. Ann's.

The decay of that edifice, or perhaps the dawning of a more peaceable era, led them to remove the lower ground across the river, and to plan and found the Cowdray Manor House. The house was designed in the form of a quadrangle, and covered an area of 110 by 122 ft.

The entrance gateway, which faces towards the west, has suffered little, either from the fire or from the ravages of time. Immediately across the quadrangle is the front of the banqueting-hall, known as the "Buck Hall" by reason of certain carved stags'-heads that were formerly among its ornaments, but vanished in the conflagration. The great banqueting-hall had a magnificent carved roof; the form of it is still indicated to some extent by those of the handsome stone corbels that still survive on the walls and that once supported its arches. The hall was lighted by a six-storied bay and three smaller windows, shown in our illustration.

In 1552 Edward the VIth was entertained at Cowdray House by Viscount Montague, who, in spite of the fact that he was then an old man and a Roman Catholic, armed and equipped a force for Elizabeth at the time of the Spanish Armada, and marched to Tilbury with his sons and grandson at the head of 200 men. He was honoured three years afterwards (in 1591) by a visit from the Queen, who hunted and shot deer in the "close walks" of Cowdray, as the records tell us.

Whilst Dr. Johnson was staying at Brighton he went out on an excursion to Cowdray, and, according to his biographer, was much impressed with the charm and historic suggestiveness of the house, for, "Sir, I should like to stay here twenty-four hours," he said; "we see here how our ancestors lived."

If Sir Weetman Pearson carries out his purpose, it will not be long before we can see nothing there but how our contemporaries live.

F. G. ADCOCK.

[*** Mr. Adcock's sketch may prove of value as a record, if, as we regret to be informed, the whole remains are to be swept away to give place to a modern house. It might surely be possible to preserve some of the old work in connexion with the new building.—ED.]

ANCIENT IRISH BUILDINGS AND MONUMENTS.

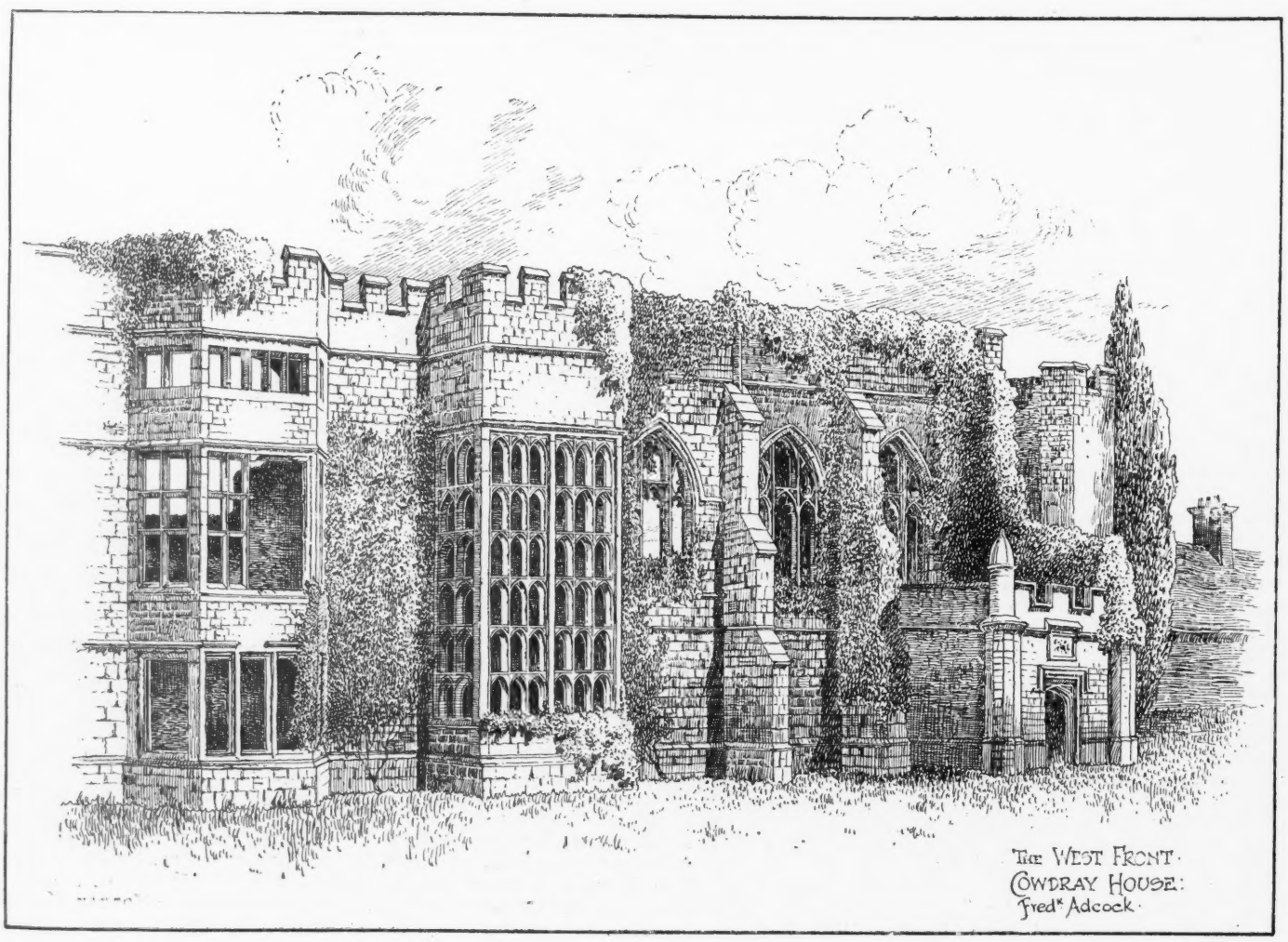
ACCORDING to the report just presented by the Commissioners of Public Works for Ireland, works of repair and preservation have been carried out at thirty structures vested under the Irish Church Act, and twenty-four under the Ancient Monuments Protection Acts of 1882 and 1892, during the past financial year. Some interesting architectural and historical notes are given with regard to some of the buildings.

GREY ABBEY.

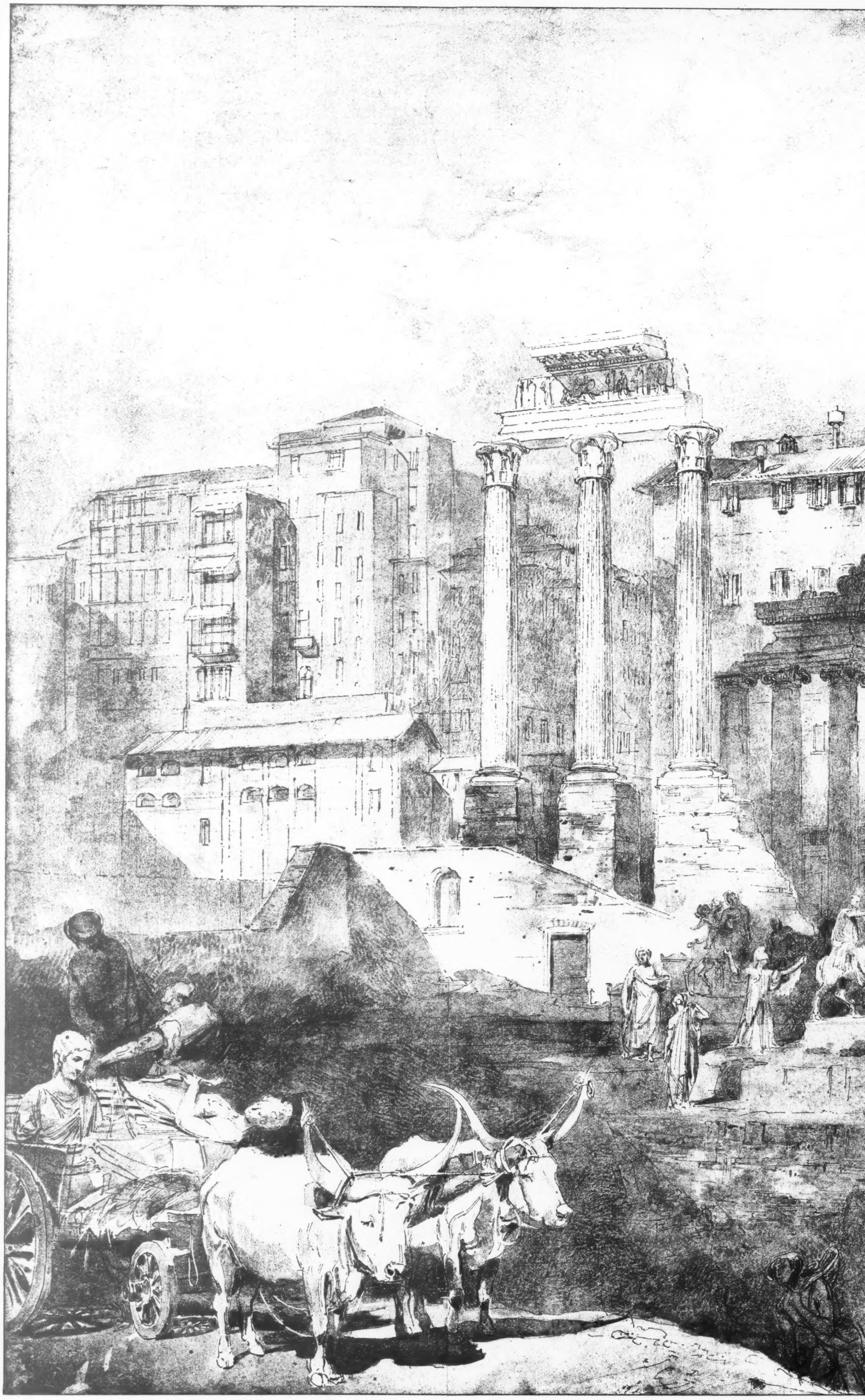
Initial repairs have been taken in hand at the Cistercian Abbey at the village of Grey Abbey, County Down. The ruins are extensive; the walls of the nave and presbytery remain at their original height, and the south gable of the refectory is also standing. The walls of the north and south transepts each containing two side chapels, are only a few feet in height; and in two of the chapels the stone vaulting remains. The nave arch which carried the west wall of the tower and the north transept arch are standing, but the latter was in a perilous condition. The conventual buildings along the eastern side, comprising chapter house and dayroom, are indicated by masonry slightly above the ground. Along the southern side of the cloister garth are the kitchen and refectory, the south gable of the latter containing three lancet windows of the same date as the east windows of the church, and the west side wall, in which are the pulpitum, and the steps leading up to it are standing at their original height. On the west side the foundations of the range of buildings occupied by the lay brethren have been discovered. The ruin has suffered greatly, its stones having been carried away to build houses in the neighbourhood. The nave was used for parochial purposes up till 1778. The work of preservation executed consisted chiefly in building three buttresses to keep up the south wall and forming the new concrete arch to the transept arch, and the concrete walling over it. The tops of the high walls were weathered in cement in such a way as to throw off the rain and prevent it entering the interior of the walls. The vaulting of the side chapels was also weathered in cement concrete. The Abbey is said to have been founded in 1193 by Affrece, wife of John de Courcy, and daughter of Godred, King of Man, and was occupied by monks of the Cistercian Order from Cumberland. It has been conjectured that the nave occupies the site of an early Irish church, and that probably the side walls of this earlier church have been incorporated, and the absence of aisles, which are a usual feature in the Cistercian plan, is quoted as supporting the suggestion. The total length of the church, including nave, tower, and chancel, is 121 ft. 6 in., and the width 24 ft. 6 in. at the west end, and a few inches narrower at the east end. The width across the north and south transepts is 82 ft. 6 in.; the width of transept, 24 ft.; and each of the four side chapels measures 16 ft. 8 in. by 11 ft. 8 in. The chapter house, measuring 35 ft. by 28 ft. 4 in., is of large size for such a comparatively small church. The bulk of the existing work generally is of the Early English period, with lancet-headed windows and most elaborate examples of moulded work in the beautiful west doorway; the west wall of the south transept and the remains of a fine doorway in the chapter house.

GRIANAN OF AILEACH.

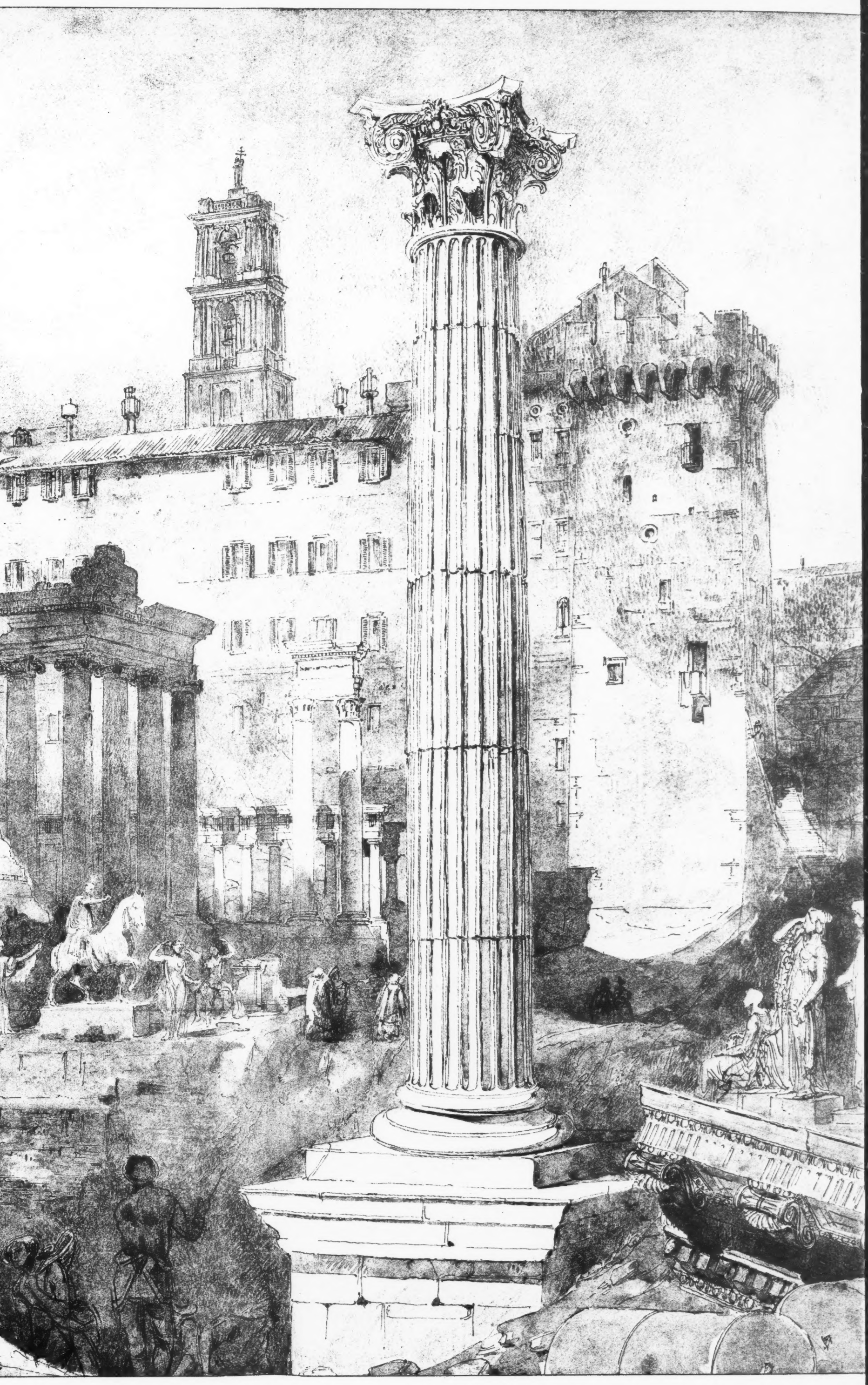
A large portion of the walling of this fort has been rebuilt with the fallen stones in dry masonry to its original height. There are several castles or stone forts vested in



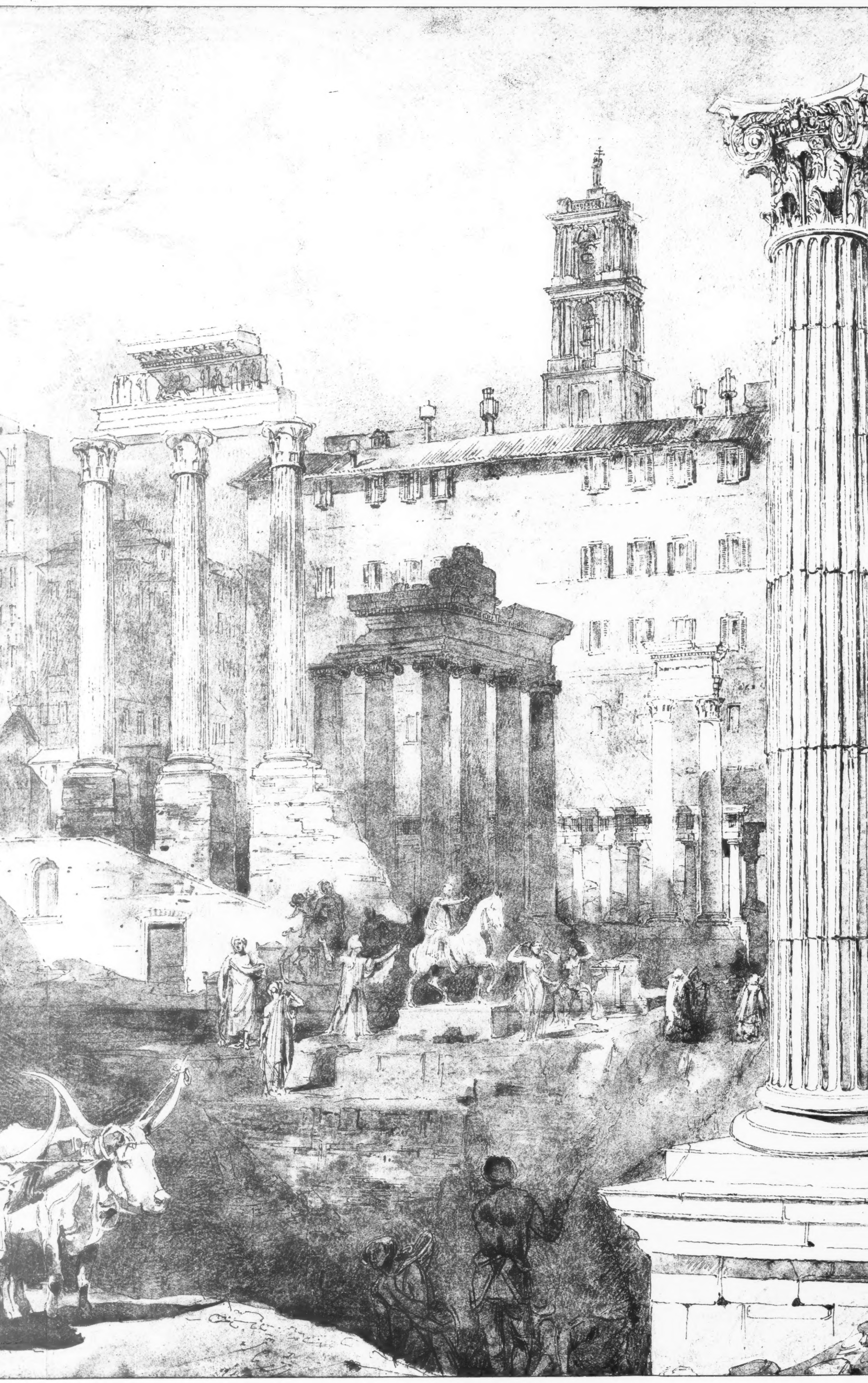
THE WEST FRONT. COWDRAY HOUSE. Fred^k Adcock.



THE ROMAN FORUM IN



AN FORUM IN THE XIXTH CENTURY.—FROM A DRAWING BY MR. A. C. CONRADE.



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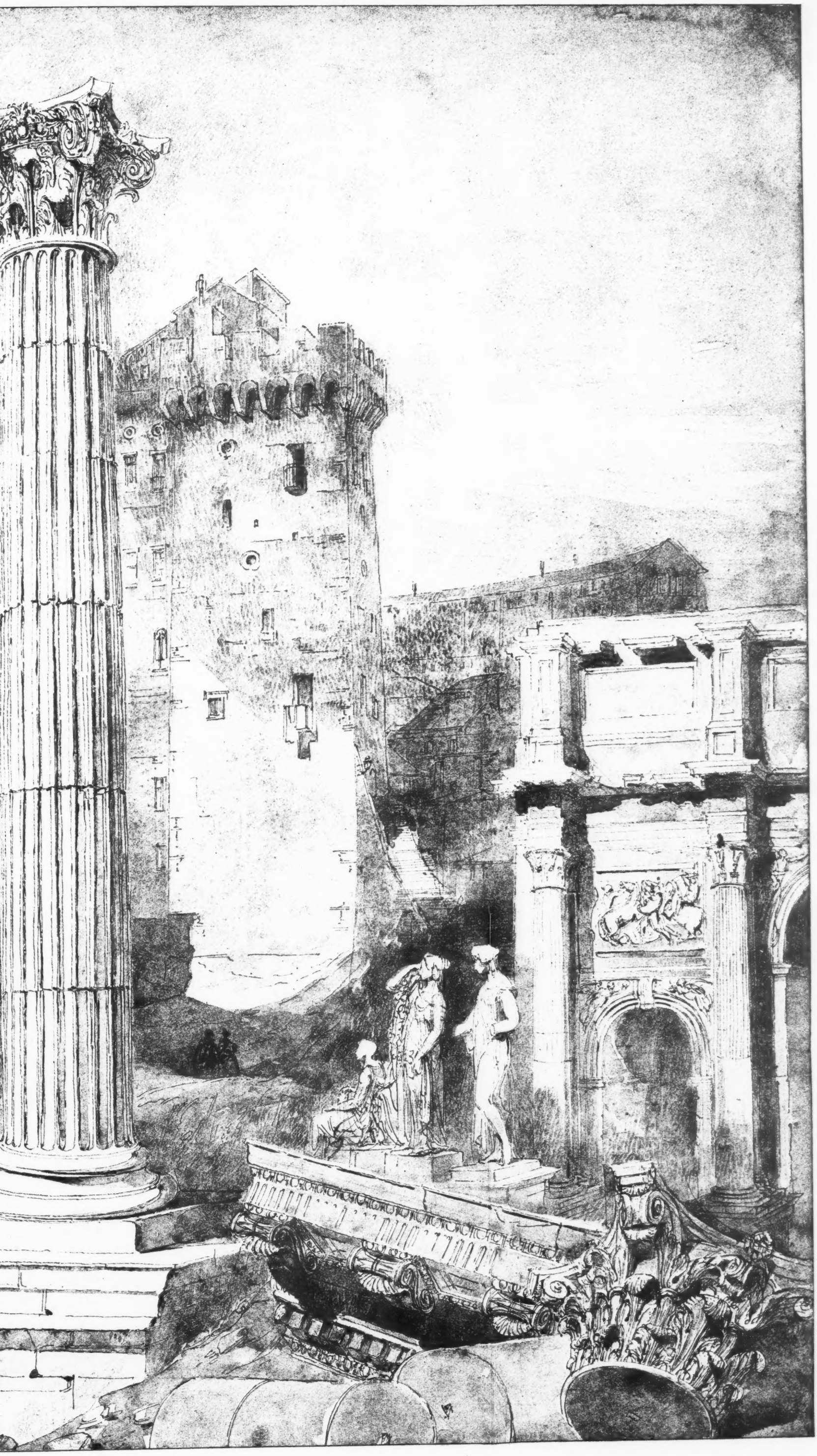

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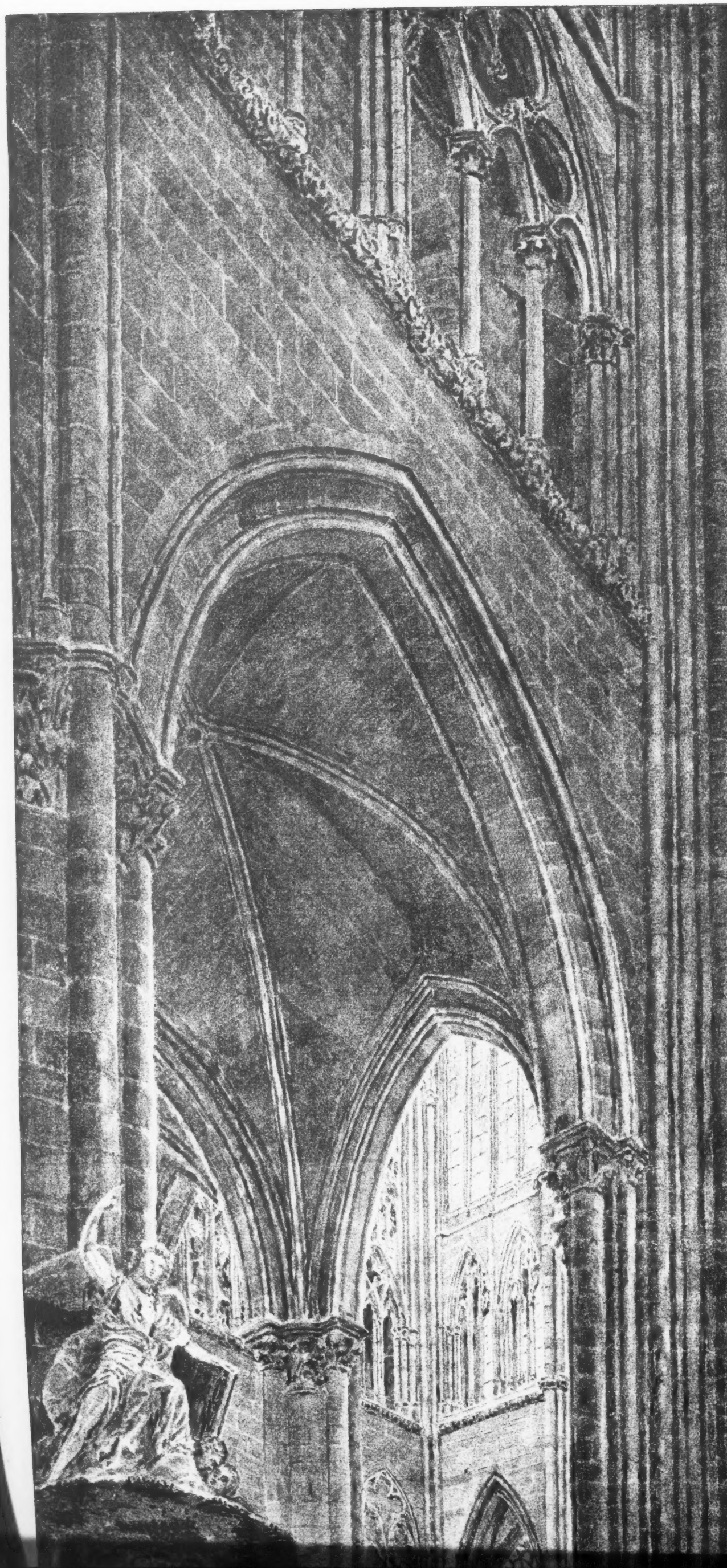
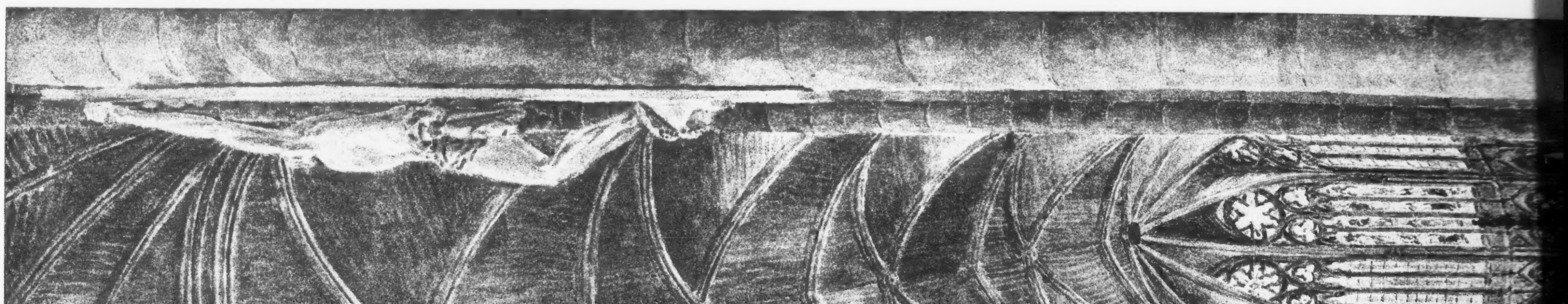
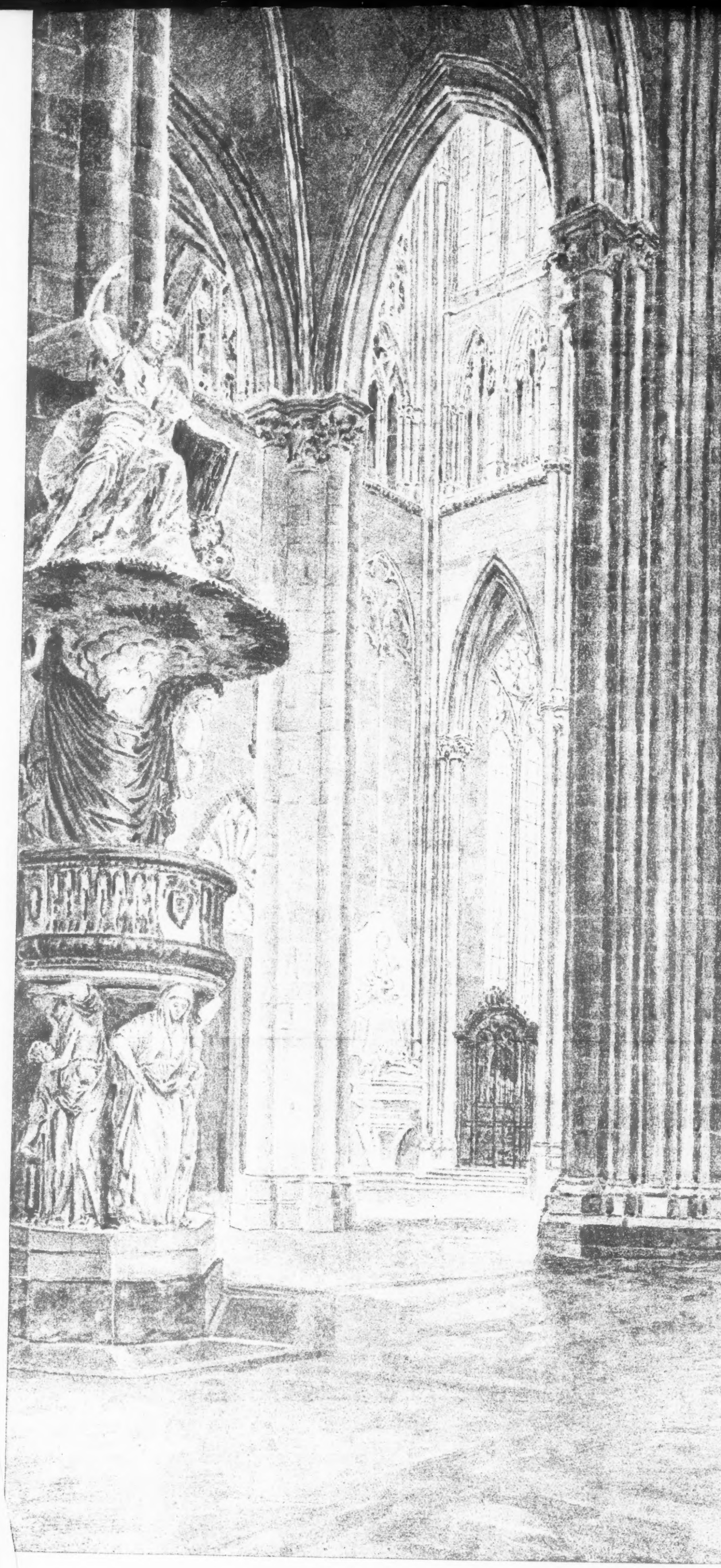
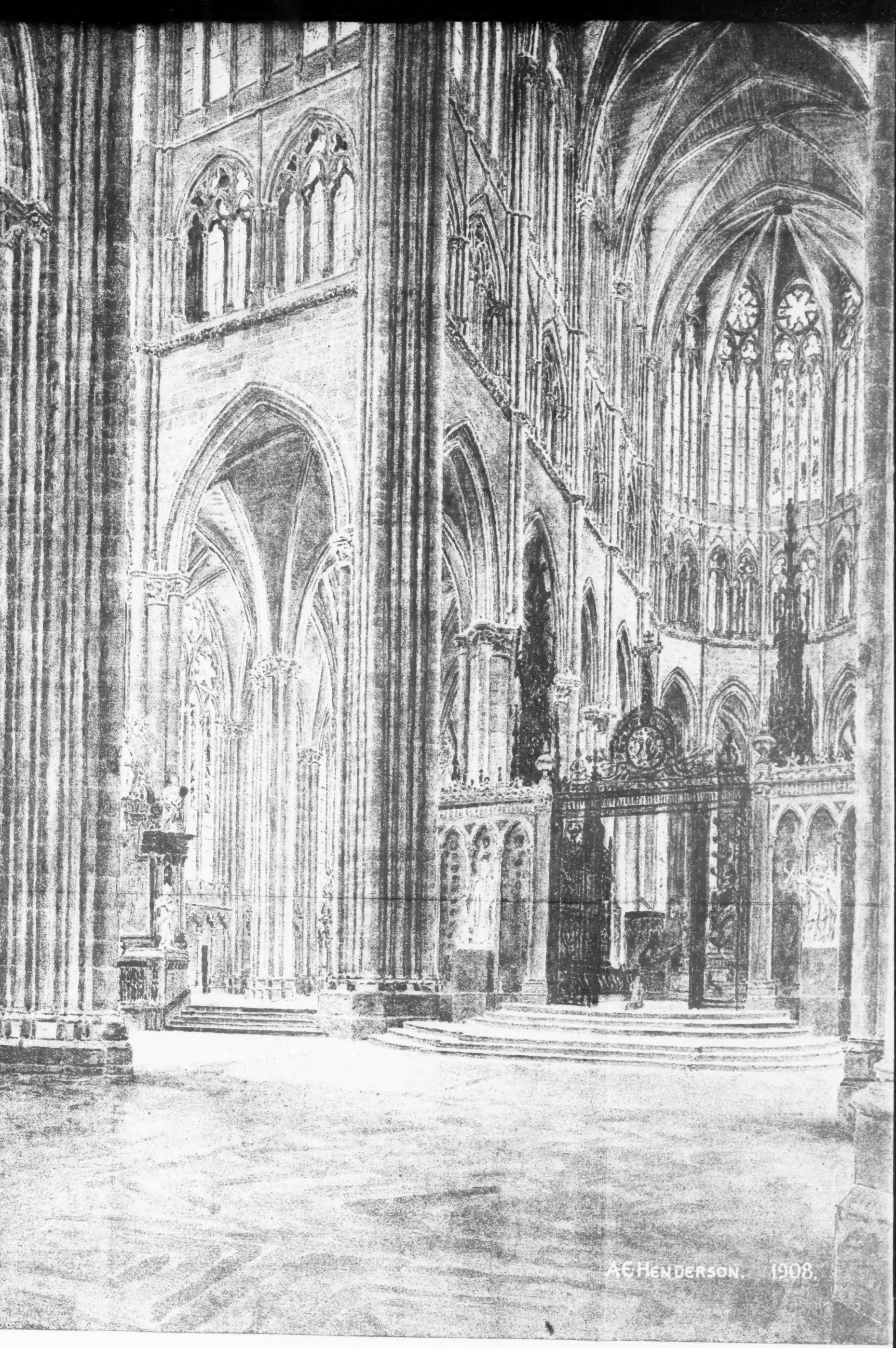


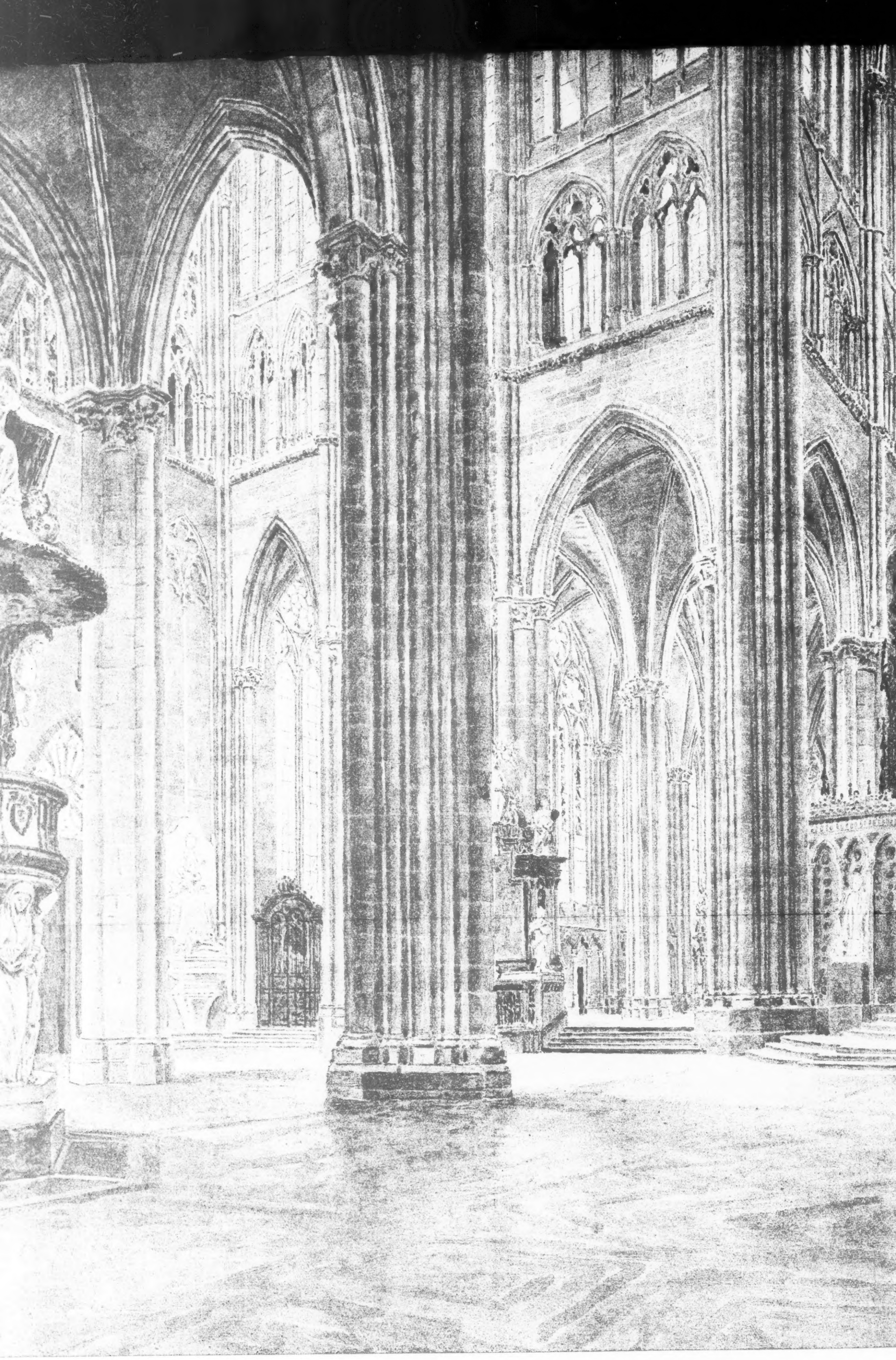




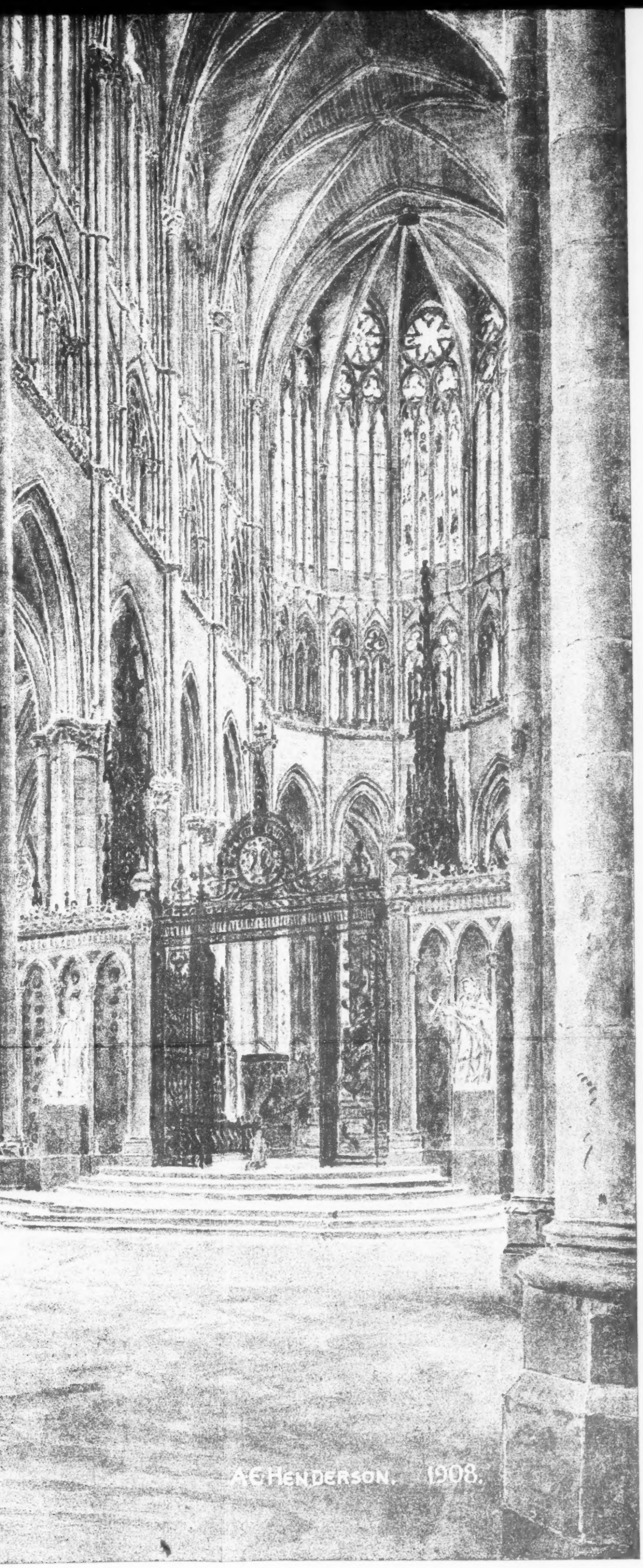
INTERIOR, AMIENS



RIOR, AMIENS CATHEDRAL.—From a Drawing by Mr. A. E. Henderson.



INTERIOR, AMIENS CATHEDRAL.—From a Drawing by Mr. A. E. Henderson.



HENDERSON.

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the Commissioners, for these ruins represent the most ancient type of construction in stone known in Ireland, and are composed of stones laid dry without any cementing material. There is no record of the original date of the construction of the Grianan, but there are frequent references to its attempted destruction. The earliest reference to its occupation is in the "Tripartite Life of St. Patrick," said to have been written in the VIth century, where Aileach is spoken of as the remotely ancient seat of the Irish kings before St. Patrick's time. In 1101 Murtogh O'Brien, King of Munster, is said to have demolished Grianan. The Grianan of Aileach was one of the most remarkable and important works of its kind ever erected by the ancient Irish, and such a careful examination of its vestiges as would help to convey a clear idea of its original form, structure, and extent would give the best evidence now attainable of the style of military building known to the Irish at the remotest period of their history.

THE ROCK OF CASHEL.

The ruins of the ancient cathedral church on the Rock of Cashel with the land adjacent thereto have been vested in the Commissioners, but the vesting did not give them any control over the burials either inside the ruins or in the graveyard outside. The solid rock comes near the surface, and generally there is only about 2 ft. in depth of earth. To make up for this deficiency a large mound of earth is raised over each grave, as the coffins would come within a few inches of the surface. On representations to the Local Government Board burials inside the cathedral have been prohibited. In the adjoining ruins of St. Dominick's Abbey (a Dominican Monastery of the XIIIth century) and at Hore Abbey (a XIIth century Cistercian House), the interior is so taken up with graves, and kept in such a neglected state, that proper repairs can only be effected with difficulty. At Holycross Abbey, a few miles from Cashel, the whole of the nave, choir, and transepts have been turned into a badly-kept graveyard, over the burials in which the Board have no control. The oldest building on the Cashel site is the Round Tower, formed of masonry varying in character, but generally composed of large stones, some of them of somewhat cyclopean character, and formed with articulated joint. There is now no trace of the early church to which the Round Tower formed an adjunct. The earliest ecclesiastical record here relates to Cormac, son of Cuilennain, a prince who was also a bishop, born A.D. 831, and slain 903. Next to the Tower in chronological order is the beautiful little Romanesque Church known as Cormac's Chapel. The first historical record relating to it shows that it was founded in 1127 by Cormac McCarthy, King of Demond. The dimensions of the church, which is the most perfect example of Romanesque work in Ireland, are as follows: The nave spanned by a barrel vault, is 29 ft. 8 in. by 17 ft. 8 in.; the groined chapel, 13 ft. 8 in. by 10 ft. 10 in.; the croft over the nave, 27 ft. 2 in. by 16 ft. 2 in.; and the croft over the chancel, 12 ft. 6 in. by 11 ft. 5 in. The cathedral itself occupied the site of a church built in 1169, and is of about a century later. It occupies the whole of the space between the Round Tower and Cormac's Chapel. The most remarkable feature of this cathedral is the very short nave compared with the length of the choir. There are no aisles in any portion of the cathedral. The canopied buttresses at the salient angles are interesting, and a peculiarity in construction rarely seen elsewhere is in the re-entrant angle towers at the junctions of the nave and transept. Another striking feature is the tall and stately windows of the transepts, and the triforium is also remarkable. The Rock of Cashel was taken by Cromwellian soldiers under Lord Inchiquin in 1647. The church was left in a ruinous condition for a time, but was repaired in 1686 and restored as a cathedral in 1729.

Almshouses at Chipping Campden

ALMSHOUSES AT CHIPPING CAMPDEN.

DELIGHTFULLY situated on the high tableland of the Cotswolds, some eleven miles from Stratford-on-Avon, is the little market town of Chipping Campden, once famous for its trade in wool. To the wealth acquired in this industry by former citizens it owes its beautiful church, quaint market-house, and nearly the whole of its old-world buildings; in fact, the whole town is a standing monument to the once prosperous English wool trade. This interesting place has recently become the home of that band of artistic workers the Arts and Crafts Association. Prominent among its buildings is the picturesque set of almshouses, founded in 1612 by Sir Baptist Hickes, the first Viscount Campden; who also built the Market Hall (1627), standing in the centre of the main street. The almshouses are built throughout of stone, and provide for twelve poor people.

SIDNEY HEATH.

DIARIES, ETC.

MESSRS. HUDSON & KEARNS, Ltd., Hatfield-street Works, Stamford-street, S.E., have sent us samples of their admirable diaries arranged for the use of architects, surveyors, builders, civil engineers, &c. "The Architect's Diary" is issued in two sizes, Nos. 12 and 13, No. 13 being the same as No. 12, but with two pages to a day instead of one, and with other small differences. The diary is arranged specially for professional use and it comprises:—1. Index. 2. Register of Telephone Calls. 3. Diary. 4. Note Book. 5. Rent, Insurance, and Mortgage Register. 6. Cash Book. 7. Ledger; Summary of Cash Transactions for the whole year; also cases decided in the Superior Courts of Justice during the Legal year, from November, 1907, to August, 1908, of interest to the Profession; a list of Metropolitan Surveyors and Districts, with Official and Private Addresses, and much special matter referring to the various Architectural and Engineering Associations; Alphabetical Index to the Practical Statutes, Professional Practice of Architects, Stamp Duties, etc. "The Builders' Diary," No. 11, has two days to a page, size 8½ by 5¼ inches, with Index; Register of Telephone Calls; Diary; Note Book; Bill Register for Bills Payable and Bills Receivable; Rent, Insurance, and Mortgage Register; Cash Book; Ledger; 130 pages of Tables, and other information of value to all engaged in the Building Trade. Another useful diary issued by the firm is No. 9, which is intended more for general use, though it contains much of the information to be found in the other diaries.

Messrs. Hudson & Kearns have established a reputation for the excellence of the diaries and blotting-pads they issue, and we have pleasure in again calling attention to them.

"The Decorators' Diary and Trade Year Book" has been issued for the year 1909. The Diary is interleaved with blotting-paper, and the work contains much information of use to the trade. One useful feature is the list of prices for painters' and decorators' work. The Diary is published by the Trade Papers Publishing Company, Ltd., 365, Birkbeck Bank Chambers, W.C., and it is edited by Mr. A. Seymour Jennings.

Mr. Chas. Thomerson, sanitary and hot-water engineer, sends us an artistically got up almanac with a photograph of a ship "weighing anchor" which makes a pleasant and picturesque centre to the card.

MESSRS. SPRAGUE'S ARCHITECTS' POCKET-BOOK.

We record the reappearance for this year of this excellent and convenient little publication, really a "pocket" book, which in fact we never go without. It contains space for a brief note of engagements for each day, and the preliminary matter includes a number of useful memoranda in regard to materials and constructional facts and formulæ.

Master Builders' Associations, etc.

BRADFORD MASTER BUILDERS' ASSOCIATION.

At the annual meeting of the Bradford Master Builders' Association, held at the Talbot Hotel, Bradford, the annual report and cash statement were received and adopted. The officers for the ensuing year were elected as follows:—President, Mr. T. E. Taylor; senior Vice-President, Mr. R. Raper; junior Vice-President, Mr. C. W. Booth; Treasurer, Mr. J. Moulson; Auditors, Messrs. T. Obank and C. W. Booth. The Executive Committee and representatives on the Bradford Conciliation Board and to the Yorkshire Federation of Building Trade Employers were also appointed. Various topics of trade interest were discussed, including workmen's compensation and relief work for the unemployed. At the conclusion of the meeting the President entertained the members to tea, and a social evening followed.

REBUILDING IN WATERLOO-PLACE.—A block of offices, etc., is being built by Messrs. Patman & Fotheringham in the angle, on the east side, of Waterloo-place. They take the place of the corner block, marked by its range of columns which forms part of Nash's scheme, which in that particular spot was completed in or about 1825. Messrs. Thompson & Walford are the architect of the new premises.

THE BUILDER

JANUARY 2, 1909.

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MEETINGS.

MONDAY, JANUARY 4.

The Royal Institute of British Architects.—The Fifth General Meeting (Business) of the Session. Mr. Max. Clarke to ask the ages of the gentlemen nominated at the meeting of November 2 for election as Fellows but afterwards withdrawn from candidature. Mr. G. E. Nield to move the following resolution, viz., "The Fellows and Associates of the Royal Institute of British Architects demand, as due to them, a full and satisfactory explanation from the Council, or its responsible officers, of the circumstances leading up to the proposed suspension of part of By-law 9, and direct that in future no such motion shall be moved. They condemn such proceedings as that attempted, and consider it unworthy of the Governing Body of the Royal Institute. 8 p.m.

Royal Society of British Artists' Sketching Club (Suffolk-street, Pall Mall).—Mr. Arthur Henderson, R.B.A., will read a paper, illustrated with a large number of lantern-slides, on "The Temple of Diana of Ephesus." 8 p.m.

WEDNESDAY, JANUARY 6.

Edinburgh Architectural Association (Associates' Meeting).—Mr. E. C. H. Maidman on "Cottage Hospitals and their Planning." 8 p.m.

FRIDAY, JANUARY 8.

The Architectural Association.—Mr. H. D. Searles-Wood on "Building Materials." 7.30 p.m.

Birmingham Architectural Association.—Mr. J. B. Fulton on "The Renaissance in Spain."

Illustrations.

THE ROMAN FORUM IN THE NINETEENTH CENTURY.

THE Roman Forum in recent days has been, as it were, pared to the bone in the archæological investigations which have resulted in many historical discoveries of the greatest interest and importance. But it can hardly be denied that in the process something of the poetic glamour of the old Forum, with its base-buried monuments, has evaporated, and it has become somewhat too much of an archæologist's stoneyard.

Mr. Conrade's drawing is an attempt to show the older and more picturesque aspect of the Forum before the modern excavations; a kind of poetic revival, founded on fact. He is not quite accurate in one point, as he has by an oversight represented the three columns of the Temple of Saturn as standing in line, whereas they are in reality an angle column with its two flanking ones. The column of Phocas stands in the foreground; in all probability a column taken from the temple of Saturn and set up in its present position at the beginning of the VIIth century A.D. This is the column alluded to by Byron—

> "Tully was not so eloquent as thou,
> Thou nameless column with the buried base;"

it was "nameless" then, no doubt, but nothing in the Forum is nameless now. The columns of the temples of Vespasian and of Concord are seen in the rear, and the arch of Septimius Severus on the right. The statues dotted about in the drawing are representations of statues which have been disinterred on the site at different times.

In spite of the oversight as to the relative position of the Saturn columns, this is a fine drawing, to be accepted as a kind of artist's dream over the remains of Roman grandeur.

INTERIOR, AMIENS CATHEDRAL.

AMIENS CATHEDRAL is interesting not only in itself but in comparison with other noble buildings and styles of architecture; it is, as a whole, one of the finest and purest in style of cathedrals. Certainly there is a slight difference between the western and eastern portions, but it is so slight as not to alter the general character of the design.

In comparison with English work of about the same period, there is lacking the massiveness of construction and the beautiful play of light and shade in the intricate mouldings; here there is grandeur of conception and execution, the thinnest possible buttresses, with a multiplicity of arches supporting the lofty vault and roof.

Walls are almost non-existent, their place is almost entirely occupied by mullioned and traceried windows and openings. The piers form beautiful lines running from the pavement to the groins of the vaulting, all the parts being in harmony and in exquisite proportions, showing the master mind of Robert Lazarches, the architect.

What a contrast Gothic Amiens is to Byzantine Santa Sophia! Amiens is a stone building with every constructive material and feature showing as a thing of beauty; in Santa Sophia the constructive material is either in a precious material or rough brickwork masked by linings of marble, mosaic, or stucco.

AMIENS.	SANTA SOPHIA.
Beautiful lines, accentuated windows and coloured glazing.	Beautiful surfaces, coloured surfaces, and windows unobtrusive.
Carving boldly executed.	Carving with slight projection, but boldly undercut.
Constructive stone.	Masked walling.

Both buildings are supremely beautiful, yet so diametrically the opposite.

Again, what Amiens lacks in mouldings and interesting architectural carving, it gains in figure sculpture. No English cathedral has the like. This is placed in such positions that it can be readily seen and studied; it is both in the round and in relief, thoroughly thought out, strung together, and superbly executed; all with that serious reticence and dignity characteristic with a style nearing its zenith. How similar the figures are to the Vth (late Archaic) B.C. Greek! As an example, St. Ulpha (Ruskin's No. 52, in "The Bible of Amiens, Interpretations") might be easily mistaken for an Athene or Artemis, if it were not for the different type of clothing worn at these respective periods. A. E. HENDERSON.

CATHEDRALS OF ENGLAND.

I.—ST. PAUL'S.

WE have thought it worth while to commence a re-issue of the series of illustrations and plans of the English cathedrals which were published in the *Builder* about fifteen years ago. They are all out of print now; copies of some of them are often asked for which cannot be supplied; many of the views were made by some of the best architectural draughtsmen of the day; and the plans are of real and incontestable value, having been either the result of a direct survey for the purpose, or based on careful plans made by the Cathedral Surveyor and checked by special measurement when considered desirable. These are, we believe, the only set of published plans of the cathedrals to so large a scale, and which are reliable; and in the case of the mediæval cathedrals their value has been added to by a careful distinction of the various dates by variations of shading.

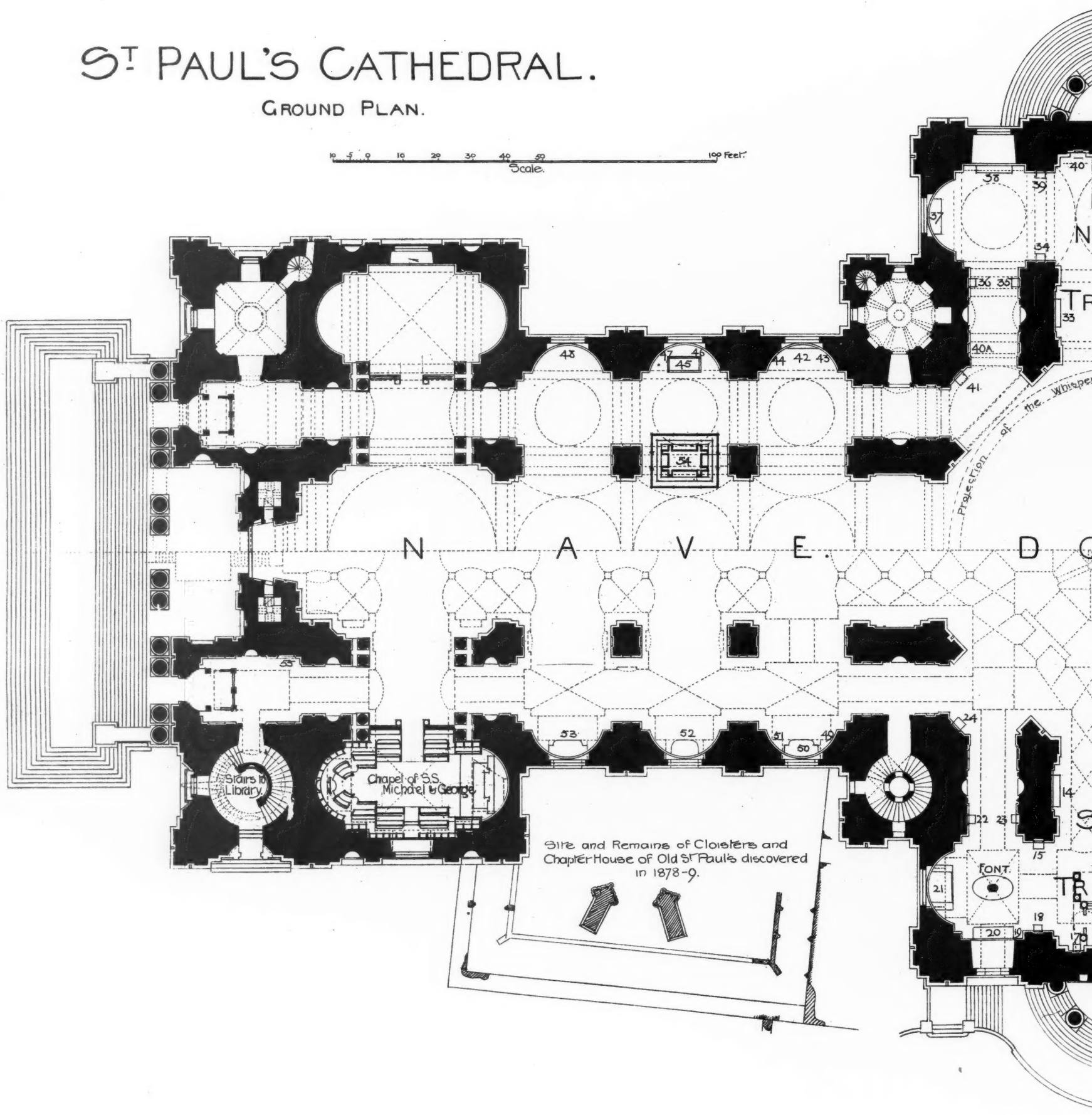
Although the original object of the series was to illustrate the mediæval cathedrals, in the re-issue we have thought it most suitable to commence with the metropolitan cathedral. Our plan of it was originally based on a large-scale and very carefully engraved plan lent to us by Mr. Somers Clarke, which was supplemented by special measurements at the building. For the present issue this plan has been gone over and brought up to date in regard to certain minor alterations—the altered position of the Wellington monument, etc.

In the illustration the object has been to select a point of view which would realise something of the soaring effect which the composition of the two campaniles and the dome presents to the eye when they are seen in conjunction on the approach from Ludgate-hill. In the flank view St. Paul's has too much the effect of a long box with a dome seated on the centre of it. Seen from the western position, where the campaniles group directly with the dome, the defect of this long level line is kept out of sight, and the whole assumes more the aspect of a spontaneously conceived architectural composition, with a unity of effect and conception which certainly does not strike one in the flank view of the building. In fact, the dome, which presupposes a wide central area perfectly different in character from the narrow "crossing" of a mediæval cathedral with its central tower, is a feature much more fitted for the culmination of a plan of tolerably square proportions, a plan of the Greek cross type, than for a long narrow plan of the Mediæval type; it requires a pryamidal rather than a longitudinal composition; and there can be no doubt that Wren's architectural instinct was true in leading him to prefer his former plan for St. Paul's (the one worked out in the well-known model now in the Cathedral), in which a nearer approximation is made to the Greek cross type of plan, and the whole composition has more distinct reference to the dome as its central motive. The same principle is illustrated in the plan and design of St. Peter's, which must undoubtedly have presented a much finer external effect, as a composition, when in the dimensions left by Michelangelo, before Carlo Maderno had added the lengthened nave which throws the dome back and prevents it from taking its proper place in the composition. St. Paul's is, in fact, a Mediæval plan treated as a Renaissance building, and the two elements do not harmonise.

A foreshortened view from the west realises this pyramidal effect of grouping which the dome seems to require, and affords an opportunity of throwing the more delicate and graceful treatment of the campaniles into contrast with the broad mass of the dome behind, the two features mutually assisting each other by contrast. There is no accessible point on the ground level, however, from which this combination could be shown in a drawing without distortion. There are photographs which give fine combinations of the dome and campaniles, but they are all taken from the roofs of houses, and even then the dome is in some cases either distorted or thrown too far back. or too low in the composition, and loses its rightful predominance. We have therefore

St PAUL'S CATHEDRAL.

GROUND PLAN.


10 5 0 10 20 30 40 50 100 Feet.
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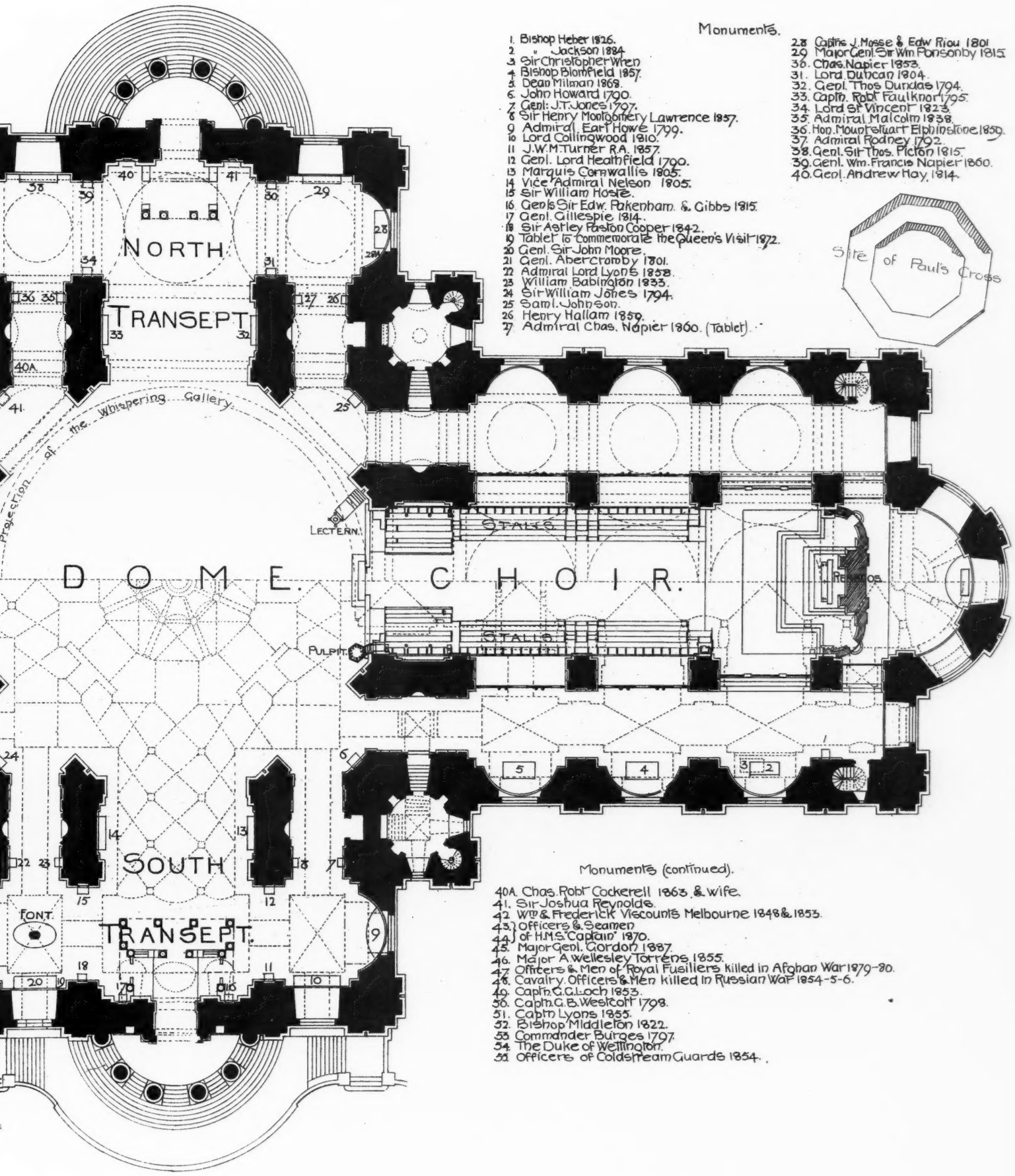
Projection of the Whispe



Monuments.

1. Bishop Heber 1826.
2. " Jackson 1884
3. Sir Christopher Wren
4. Bishop Blomfield 1857.
5. Dean Milman 1868.
6. John Howard 1790.
7. Genl: J.T. Jones 1797.
8. Sir Henry Montgomery Lawrence 1857.
9. Admiral Earl Howe 1799.
10. Lord Collingwood 1810.
11. J.W.M. Turner R.A. 1857.
12. Genl. Lord Heathfield 1790.
13. Marquis Cornwallis 1805.
14. Vice Admiral Nelson 1805.
15. Sir William Hoste.
16. Genls Sir Edw. Pakenham. & Gibbs 1815.
17. Genl. Gillespie 1814.
18. Sir Astley Paston Cooper 1842.
19. Tablet to commemorate the Queen's Visit 1872.
20. Genl. Sir John Moore.
21. Genl. Abercromby 1801.
22. Admiral Lord Lyons 1858.
23. William Babington 1833.
24. Sir William Jones 1794.
25. Saml. Johnson.
26. Henry Hallam 1859.
27. Admiral Chas. Napier 1860. (Tablet).
28. Captns J. Mosse & Edw Riou 1801
29. Major Genl. Sir Wm Ponsonby 1815
30. Chas. Napier 1853.
31. Lord Duncan 1804.
32. Genl. Thos Dundas 1794.
33. Capth. Robt Faulknor 1795.
34. Lord St Vincent 1823.
35. Admiral Malcolm 1838.
36. Hon. Mountstuart Elphinstone 1859.
37. Admiral Rodney 1792.
38. Genl. Sir Thos. Picton 1815.
39. Genl. Wm. Francis Napier 1860.
40. Genl. Andrew Hay, 1814.

Monuments (continued).

40A. Chas. Robt Cockerell 1863. & wife.
41. Sir Joshua Reynolds.
42. Wm & Frederick Viscounts Melbourne 1848 & 1853.
43. } Officers & Seamen
44. } of H.M.S. 'Captain' 1870.
45. Major Genl. Gordon 1887.
46. Major A. Wellesley Torrens 1855.
47. Officers & Men of Royal Fusiliers killed in Afghan War 1879-80.
48. Cavalry. Officers & Men killed in Russian War 1854-5-6.
49. Capth. C.G.L. Loch 1853.
50. Capth. G.B. Westcott 1798.
51. Capth Lyons 1855.
52. Bishop Middleton 1822.
53. Commander Burges 1707.
54. The Duke of Wellington.
55. Officers of Coldstream Guards 1854.

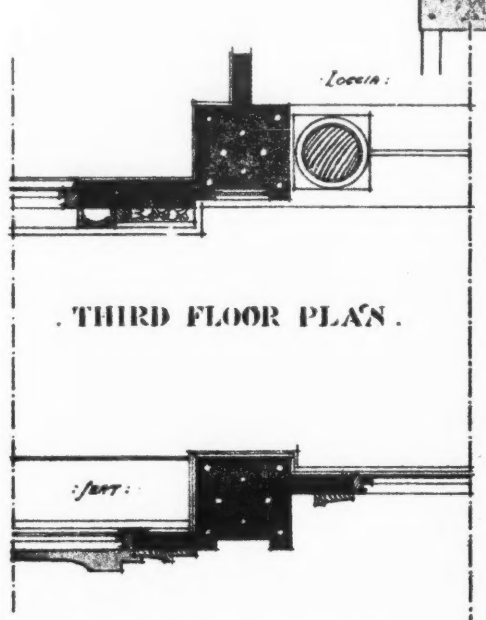
CATHEDRALS OF ENGLAND. ST. PAUL'S, FROM THE SOUTH-WEST.

FROM A DRAWING BY MR. H. H. STATHAM, F.R.I.B.A.

DESIGN FOR A CLUB IN FERRO-CONCRETE

DETAIL ELEVATION

: SCALE HALF INCH = ONE FOOT :



. THIRD FLOOR PLAN .

. SECOND FLOOR PLAN .

: CONSTRUCTION NOTE. :

: PUBLIC BUILDING RULES & CUSTOMS : IN PORTLAND CEMENT CONCRETE. RE-INFORCED WITH EXPANDED METAL 16TH THICK :

: WALLS : 6" PORTLAND CEMENT CONCRETE FILLING BETWEEN STEEL ETC :

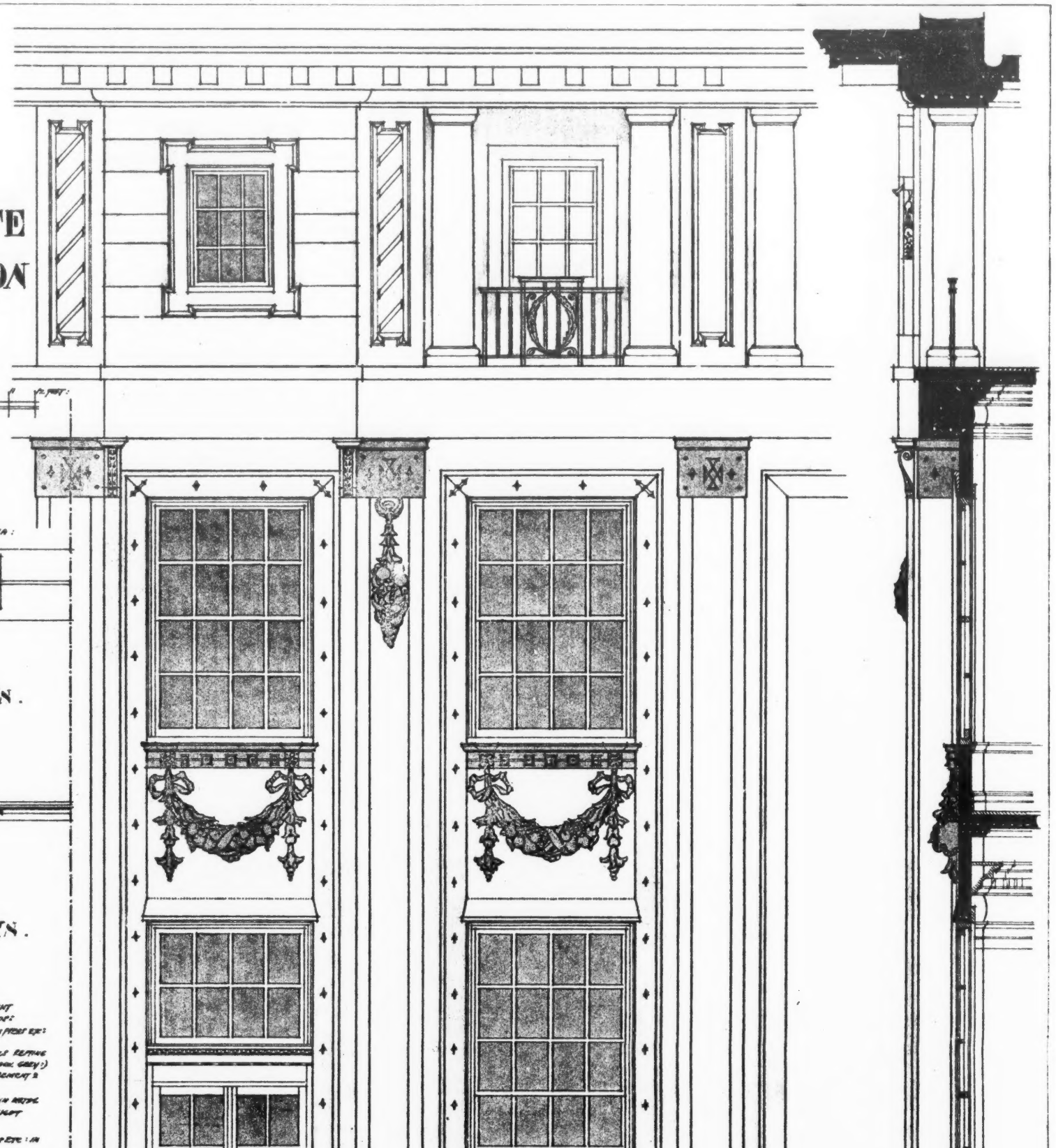
: FINISHES :

: FIRES ON GROUND FLOOR. PANELLED WITH GREEN GRANITE. BELOW'S RESTING IN CONCRETE. BY FRENCH IN PORTION : (CONTRAST IN BRICK GREY) :

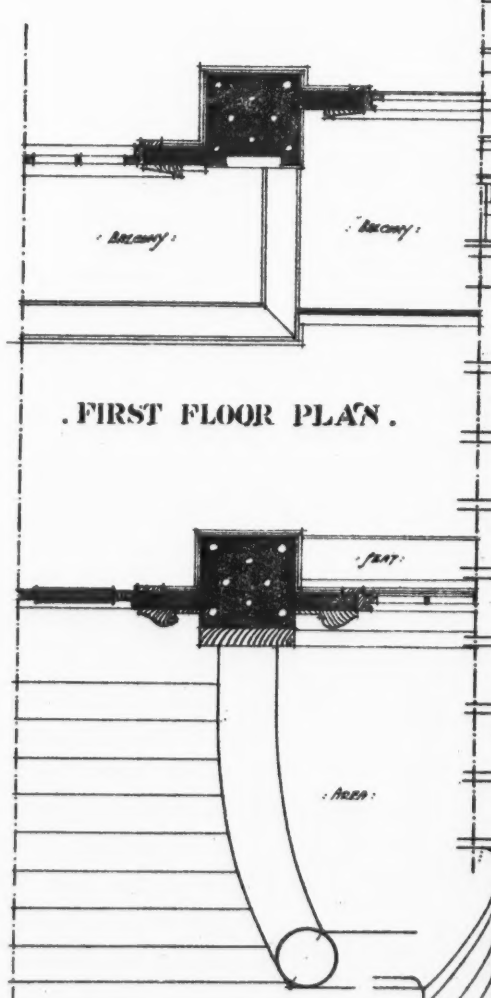
: CEILINGS. LINTELS. CORNICE ETC. REMODELLED IN PORTLAND CEMENT & PLAIN DUTY (COLOURED LIGHT GREY) :

: MULLIONS ETC. IN COPPER GREEN PATINATED. FIXED WITH GUN METAL BOLTS & FILLING BETWEEN MULLIONS & PANEL IN LIGHT GREEN MOULDED :

: CAPS TO MAIN CEILINGS. 2½ PLANE TILES & EXTERNAL CHIMNEY ETC : IN CRAFT BRANDED (COLOURED BLUE) :

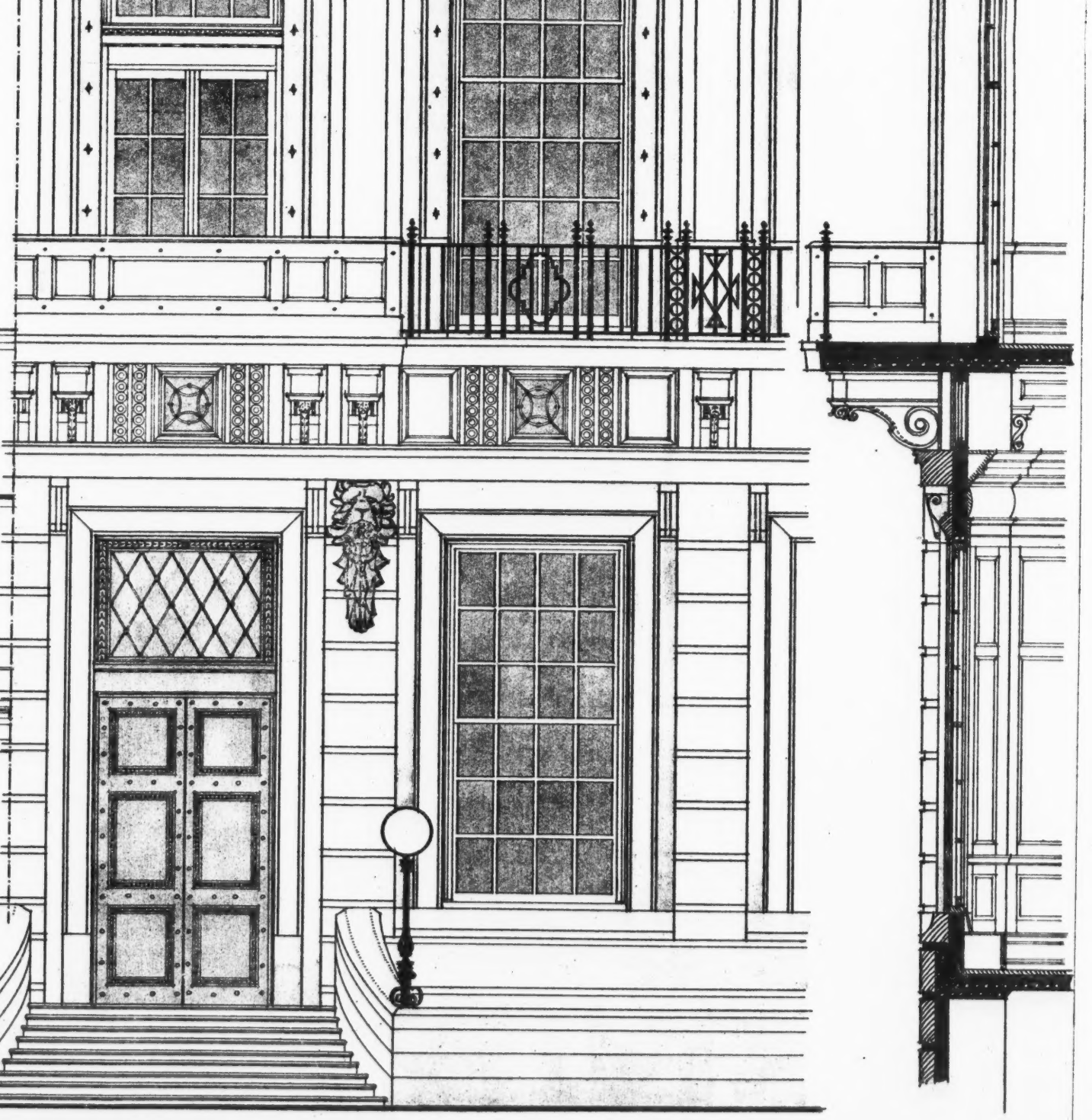


: WALLS : 6" PORTLAND CEMENT CONCRETE, FILLING BETWEEN PIERS ETC :
: FINISHES :
: PIERS ON GROUND FLOOR, PANELLED WITH GREEN GRANITE, BLOCKS FLOATING IN CONCRETE, PIT FACING IN SECTION : (COLOURED IN SIGNAL GREEN) :
: CORNICE, LINTELS, CHANNEL ETC. RENDERED IN PORTLAND CEMENT & FINE DUST (COLOURED LIGHT GREY) :
: BALUSTRADES ETC IN DARK GREEN MARBLE, FIXED INTO IRON METAL BOXES & FILLING BETWEEN MUNTINGS, & PIER, IN LIGHT GREEN MARBLE :
: COPE TO MAIN CORNICE, 2ND FLOOR SILLS & RAILINGS, DOMES ETC : IN CAST BRONZE (COLOURED BRIGHT STEEL) :



. FIRST FLOOR PLAN .

. GROUND FLOOR PLAN .



BUILDER COMPETITION FOR A FAÇADE FOR A CLUB, IN FERRO-CONCRETE. FIRST PRIZE. BY MR. F. J. LUCAS.

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assumed a point of view sufficiently far back to allow the dome to be seen in its true proportions in combination with the campaniles. The assumed standpoint is distant from the building about two and a half times its own length, and the proportions have been carefully worked out in perspective, from the plan and from Gladwin's careful engraving of the north elevation.

The Queen Anne Monument, which should naturally have shown in the view, has been omitted intentionally, since it is no part of the building, and from this point of view it would have obtruded awkwardly in front of the cathedral. The peculiar effect of the weathering on the building, which has divided its two stages almost precisely, over most of the building, into a light-coloured story above and a dark and smoke-blackened one below, it may be said is also an accidental effect having nothing to do with the architectural design of the building; but it is too characteristic and picturesque an effect, and too much blent with everyone's recollection of the building, to be omitted. The sharp line of demarcation between the upper and lower stories almost suggests the idea that a different bed of stone had been employed in the upper portion; but the result is due, we believe, merely to the greater effect of rain on the more exposed upper portions, coupled with the fact that the cornice of the lower order affords a protection from rain to the parts immediately beneath it, and thus gives that marked separation between the blackened and the cleaner portions. The plinth stones are whitened again where the drip from the cornice has fallen on them, and the angle pilasters at the exposed south-west corner have also got their share of cleansing.

The building of St. Paul's followed, of course, upon the destruction of the Gothic cathedral in the great fire of London, but it is not popularly known, probably, that before that event the old cathedral had been so much damaged by fire and neglect combined, that a complete scheme for its restoration had been formed, first entrusted to Inigo Jones, and latterly, in the reign of Charles II., to Wren, who intended to add to the mediæval cathedral additions in the Italian style, "after a good Roman manner, instead of the Gothic rudeness of the old design." It was in the consideration of the method of doing this that Wren first suggested the idea of the central space with a dome over it, which was eventually to form part of his new design. In 1666 the estimates for the work had actually been ordered, when the great fire broke out and (perhaps fortunately) put an end to all idea of this patchwork of Gothic and Renaissance, by destroying the old church completely.

The first stone of the present cathedral was laid on June 21, 1675, and the top stone of the lantern laid in 1710. Before the existing design was finally adopted, there had been (besides stray sketches) two other designs made by Wren. One of these is the Greek cross design already referred to, of which the model was made, and another is one which received the formal approval of the King, but with leave to deviate from it, fortunately for us and for Wren's reputation, for this officially approved design is unquestionably the worst of the three. The central feature is a kind of *mélange* of a dome with a minaret on it, and it is difficult to understand how an architect capable of designing the dome as we see it could have ever thought of erecting such a barbaric affair. In regard to the first design to which we have already referred, on the Greek cross type of plan, while there is no doubt that the plan was the finer and the general conception of the whole broader and more dignified than the present building regarded as a whole, we cannot share the wish sometimes expressed that the design shown in the model had been carried out in place of the present building. The type of plan adopted is far better, but the details are much inferior, especially of the dome, the existing dome being far more refined, more graceful, and better proportioned than that in the "model" design.

The plan of St. Paul's was changed in axis from that of the old cathedral, partly to get rid of the difficulty which would have been caused by building on the site of walls whose foundations could not be depended upon, and which it would nevertheless have been a work of great labour to entirely remove. As matters are, the oblique position toward Ludgate-hill which the cathedral assumes is hardly a disadvantage to it, as it is so closely shut in by houses and so entirely devoid of anything like a grand approach that it seems better that it should have the element of irregular picturesqueness in its position, since that of stateliness is out of the question. It is greatly to have been desired that the surroundings of the cathedral should have been laid out in a more stately and spacious manner while there was the opportunity afforded by the destruction of house property wrought by the fire; but in the natural eagerness of owners to repair their misfortune as soon as possible, the rebuilding of the adjoining houses had been commenced before anything was settled as to the plan of the cathedral site, and Wren had to accept the position. As it stands, the Cathedral loses much of the dignity of effect it might have had on a better arranged site, and moreover there is no point whence it can be seen as a whole. On the other hand it perhaps gains a certain effect of sublimity—what we have called its "soaring" effect—from the very fact of rising out of the confined mass of inferior buildings so closely surrounding it.

The two chapels eastward of the western towers were added to the plan, much against the will of Wren, in order to be used as chapels to special saints in case the Romish ritual could be restored, as James II. secretly wished. Internally they are an addition to the architectural variety of the church, but externally they are an excrescence and a detriment to its effect, fitting awkwardly against the base of the towers, and shortening the apparent length of the nave when seen in perspective.

Architecturally speaking, the campaniles and the dome are the making of St. Paul's. The design of the substructure is very commonplace, consisting of a double order of applied pilasters repeated in an almost mechanical and formal manner all round the building; and the windows are of poor and ineffective design. The worst thing about it all, however, is the fact that the upper half of the wall is for the most part a mere empty sham with nothing behind it; and when once this is known it is impossible to forget it, or to have the same feeling towards the building which a spectator might have, despite its defects of detail, who believed its external visible mass to represent its interior arrangement and contents. It has been argued recently that this upper wall was a constructive expedient to gain greater abutment to the central mass; but the explanation is far-fetched and most improbable; the natural (and in fact more creditable) explanation is that Wren, like every other architect of his day, was under the dominion of the Classic convention which demanded that structure should be screened by a scenic display of Order and Entablature. The floral ornament above and about the windows is in the artificial taste of the day, and cannot be called ornament, being merely sets of festoons with no design whatever, though with a certain boldness and freedom of execution. The sculpture is respectable, and nothing more. The double-storied colonnade of the façade has however a very fine effect, partly owing to the deep shadow from the recesses behind the columns; this in fact just shows what it is that the rest of the building wants: it is all too flat.

All these faults of the substructure, however, are forgotten when the eye rises to the campaniles and the dome. The former are most graceful and original in design, and as full of play of surface and light and shade as the substructure (except the portico) is destitute of it. The dome, with its fine colonnade, with the original and truly constructive treatment of the solid bay at every fourth inter-columniation (marking the main points of support of the dome), and the deep recesses between and behind the columns, is a noble piece of architecture of its kind; and the actual dome, with its finely-curved outline, rises in a most effective and graceful manner above the main colonnade behind which it is recessed. The lantern also is a very graceful structure, though rather too heavy for its apparent situation; and here again we come on the drawback of want of architectural truth. The merest tyro in construction knows that the stone lantern could not stand on that timber dome; and the concealed cone to carry it (the line of which is partially discerned, however, and not disagreeably, behind and between the main colonnade) only half reconciles us, by its ability and novelty as a constructive device, to the æsthetic sin which has been perpetrated. In a previous study for the dome Wren had adopted, like Brunelleschi, the device of a slightly-pointed masonry dome to carry the weight of the lantern, ingeniously counter-weighting its exterior thrust at the base by a cove hung inwards. It is a pity that he did not adopt this completely logical constructive expedient, which would have made the exterior dome a reality instead of a sham.*

With all these drawbacks, however, St. Paul's dome remains one of the great things of architecture, which has produced few structures at once so grand and so graceful, and we do not say that the popular admiration of it is at all more than it justly claims.

We may call attention to one aspect of the colonnade which architects and artists will enjoy, though it cannot be shown on a drawing in consequence of the conditions of perspective drawing. Go on a bright day into the southern enclosure of the railed space, stand near the remains of the old cloister and carry the eye up the re-entering angle of nave and transept. Over where the two cornices meet curves the colonnade of the dome, three or four bays only visible, the whole depth and solidity of the construction emphasised by the manner in which we look up between the columns to the very back of the soffit over them, and realise the scale and the projection of the colonnade, crowned by the sweep of its cornice against the sky. The effect is quite sublime. H. H. S.

DESIGN FOR A CLUB FAÇADE IN FERRO-CONCRETE.

THIS is the design to which the First Prize of 20 guineas was awarded in the competition instituted by the *Builder* for the best design for a façade in ferro-concrete suitable for a club. Mr. F. J. Lucas is the author.

Mr. Lucas has adopted the right general principle for a design in this kind of structure, of keeping it in strictly maintained vertical and horizontal lines. The colouring in the original drawing, which does not show here, conveyed some information as to the method of decoration, which requires a word of explanation in connexion with the monochrome reproduction. A good deal of the concrete was left to show up to the surface; but in the ground-floor piers facings of granite are put on which are supported and bonded in by tongues of concrete which show visibly between them (see the section on the plate), so that the construction is obvious.

* A very interesting and instructive study of the problem of masonry construction in the cone and lantern, by Mr. William Dunn, will be found in the *Journal* of the Royal Institute of British Architects (vol. xv., Third Series; No. 2). The same issue of the *Journal* contains a paper by Mr. Mervyn Macartney, the present Surveyor to the Dean and Chapter, on the present condition of stability of the Cathedral.

The flat bands forming an architrave round the first and second floor windows are thin slabs of marble with visible metal fastenings. The terminations of the pilasters, which take the place of capitals, are bronze plates, and the swags between the windows are of the same metal.

We think it will be admitted that the design contains some very good suggestions for the decorative treatment of a ferro-concrete façade, and if it were erected as shown, would be accepted as a very good piece of street architecture.

We must correct an error in our general article on the designs, in the remark that the mosaic-faced frieze was rather out of proportion to the rest of the design. The remark was added from memory (the drawings having gone to the lithographers), and should have referred to the second-prize design, not to this one.

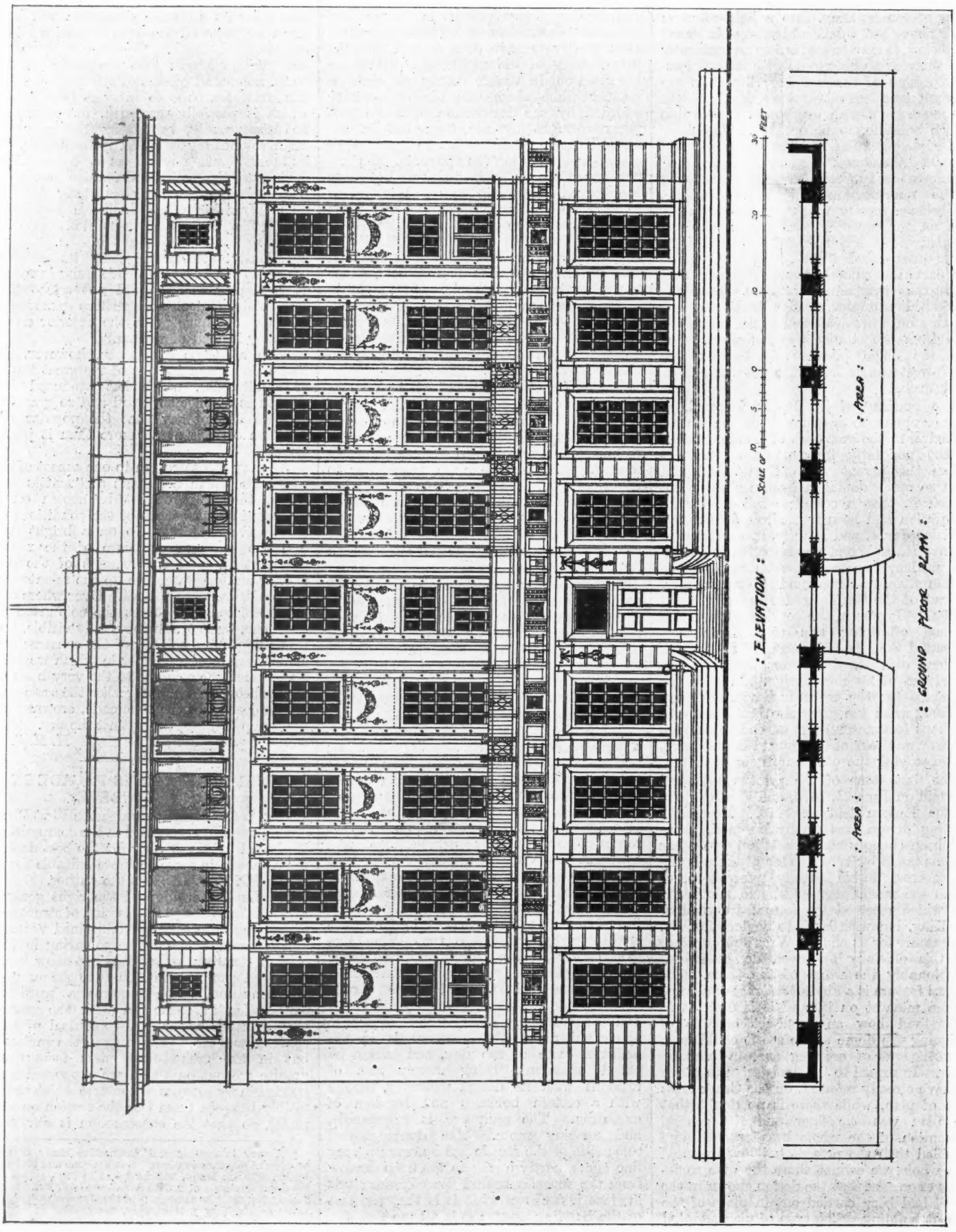
The design by Mr. Hepburn, which obtained the second prize, will be published in our issue of January 9, and a third design by Mr. C. W. Pike, which was highly commended, will be published in the issue of January 16.

The remainder of the designs have all been returned, with the Editor's thanks, to their authors.

THE VICTORIA AND ALBERT MUSEUM.

THIS being the largest and most important building recently completed in London, we thought it would be suitable to include an illustration of it among the plates in our New Year's number.

The illustration is from a photograph taken specially for us by Messrs. Sprague. Owing to the length of the façade and the bend in its plan it was impossible to include the whole in one photograph; what is shown here is the centre portion, flanked by the pavilions with cupolas at each end, and showing the octagonal cupola in the centre.



"Builder" Competition for a Façade of a Club in Ferro-Concrete. First Prize. Elevation and Plan. By Mr. F. J. Lucas. General Elevation.
(For Lithograph Plate.)

(Photograph Plate.)

VICTORIA AND ALBERT MUSEUM; CENTRE PART OF MAIN FA

Photo by Sprague & Co., Ltd., London.

PART OF MAIN FAÇADE.—Sir Aston Webb, R.A., Architect.

THE ARMENIAN CHURCH, PARIS.—M. GUILBERT, ARCHITECT.

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The architect, as we need not inform our readers, is Sir Aston Webb, R.A., whom we may congratulate on the successful termination of a great work.

THE ARMENIAN CHURCH, PARIS.

BEFORE the building of this church the Armenian colony in Paris—not a very numerous body—had no place of worship but a room rather hastily furnished for the purpose. A rich manufacturer at Tiflis, Mr Mantacheff, resolved to offer to his countrymen in Paris a church, to be built at his cost; the execution of which was entrusted to the young architect M. Guilbert, who had already distinguished himself as the architect of the beautiful memorial church erected to commemorate the victims of the lamentable Bazaar fire in Rue Jean Goujon.

The building, commenced in 1903, was completed in 1905. The new church, which is in the same street, Rue Jean Goujon, presents in its architecture rather a mixture of Persian, Greek, and Byzantine styles. The principal façade, in brick, forms a semicircle closed by a grille. In the centre projects a small porch carried by two columns in grey granite; beneath it is a square-headed door surmounted by a sculpture symbolising the Eternal Father. Beneath the gable above the porch is an open projecting bay with colonettes; this shelters the bells which, in the churches in Armenia, are generally hung in a detached erection.

In the side portions of the semicircular front wall are two doors giving access to corridors exterior to the church, which separate the building, on each side, from the neighbouring houses, and lead to a courtyard behind the apse. Above the centre of the church rises an octagonal cupola with a leaded roof, surmounted by a cross in gilt iron.

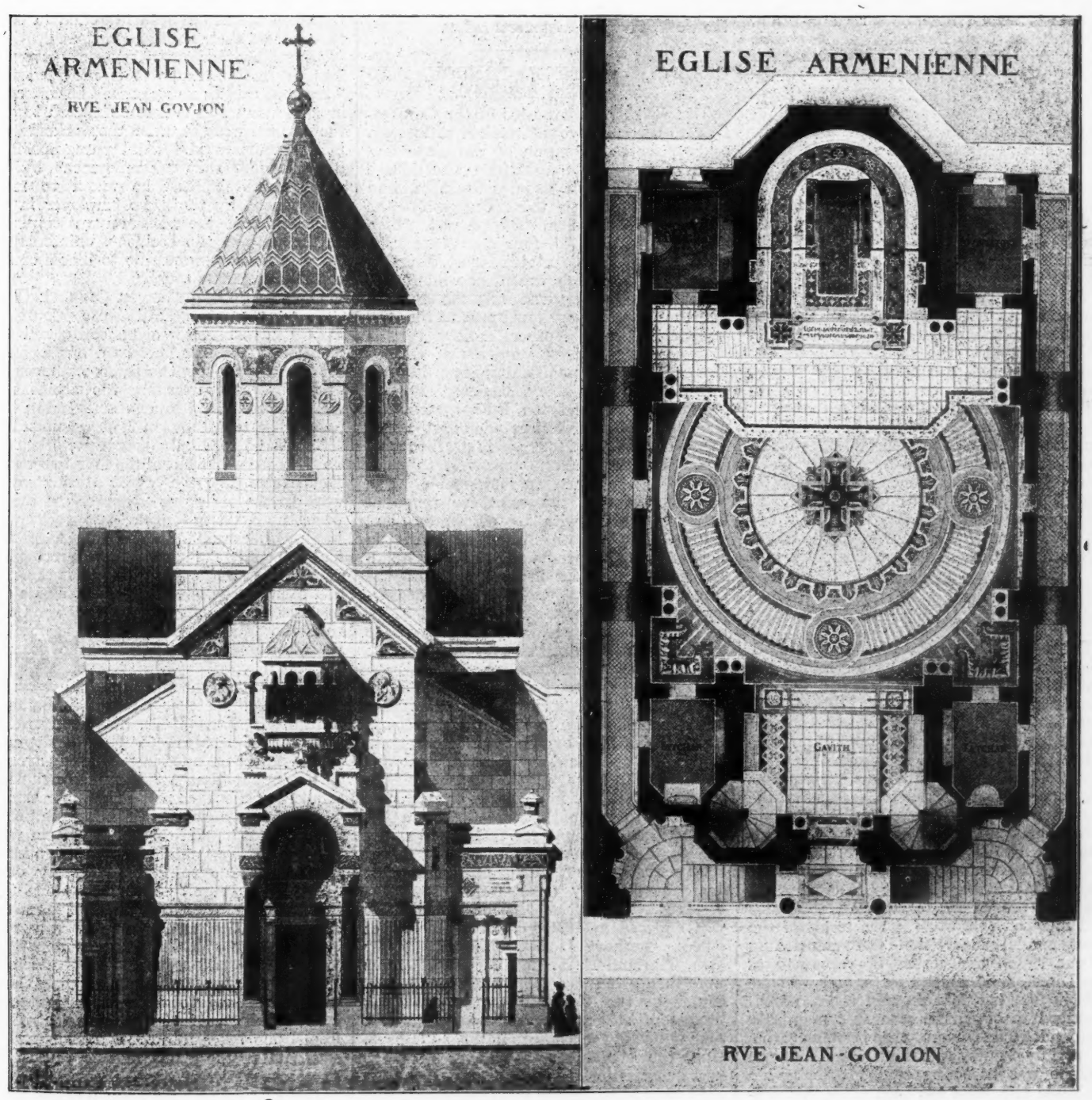
The interior plan of the church itself forms a parallelogram 23·55 mètres long by 13·10 wide. It is preceded by a "vestibule of purification," separated from the nave by a grille in gilt bronze, of very good design. To right and left of the vestibule or "Gavith," as it is called, are arranged small chapels called "Tatchar." Two staircases, showing externally on each side of the main façade, lead from the vestibule to a gallery in wood, carved and with a wooden balustrade.

The decoration of the church is very simple. Around the nave is a frieze with arabesques reproducing, by means of the architect's sketches, that which runs round the small Armenian church of Akhtamar. Beneath the frieze are eight groups of columns in polished Labrador granite, and above it rises the vaulting carrying the cupola with eight round-arched windows.

At the sides the church is lighted by three circular-headed windows filled with grisaille glass, grouped beneath a large round arch, the spandrels being filled with allegorical paintings by M. Paul Leroy. The sanctuary, enclosed by a carved wooden railing, occupies the apse, the upper portion of which is decorated with a mural painting by the same artist representing the Vision of Ezekiel, with figures of prophets painted in medallions. The altar, raised on six steps, is sheltered beneath a ciborium carried on coupled colonettes of Pyrenean granite. The steps and the sanctuary are in white marble with a panelling of coloured marbles. On each side of the apse is a door, one leading to the sacristy and the other to the baptistery. The floor of the church is laid with mosaic.

The total cost of the building was 353,000 francs.

Mr. Guilbert, the architect, it may be added, is a former pupil of MM. André and Laloux, and obtained the Medal of Honour for architecture in the Salon of 1900.



The Armenian Church, Paris: Elevation and Plan.

ENTRANCE TO CHOIR, MILAN CATHEDRAL.

THE choir gateways of Milan Cathedral are of refined Renaissance architecture, with sculpture. The centre panel, over the doorway seen in the sketch, shows, in high relief, Christ Disputing with the Doctors. The narrow side panels show the oak-tree (one of the emblems of the Scala family). The cornice is supported by dignified caryatides, in the form of angels. A. C. C.

RECORDS OF OLD LONDON: FROM PRINTS AND DRAWINGS IN THE CRACE COLLECTION.

OF these views Nos. 2, 4, 5, and 7 are after water-colour drawings by T. Hosmer Shepherd. No. 5 depicts the old houses in Chancery-lane on the west side, southern end, at the corner of Carey-street, which remained until 1853; those, view No. 2, in Fetter-lane, on the west side, southern end, abutting on Clifford's Inn, were pulled down twenty-three years ago. They were built in or about 1672; the coat-arms on the middle house were the Earl of Leicester's. No. 6 depicts the house numbered "17A," and since "16," Fetter-lane, over an entrance into Fleur-de-Lis-court, which bore a tablet inscribed "Here liv'd John Dryden the poet. Born 1631. Died 1700. Glorious John!" The house, by some ascribed to Captain William Winde, of Bergen-op-Zoom, the architect (*teste* Pennant), of Newcastle House, Lincoln's Inn-fields, was pulled down in 1887; the illustration is from a coloured print by T. W. Archer, 1852. The Nag's Head Inn and the yard, No. 4, stood at No. 39, Leather-lane, Holborn, east side, and has been rebuilt since Shepherd made the drawing fifty years ago. No. 7 shows the block Nos. 85-6-7, Fetter-lane, west side, being the east elevation of the old chambers in the south, or garden, court of Barnard's Inn, Holborn, acquired by the Mercers' Company for their new school buildings, 1893-4. View No. 3 shows Oldbourn Hall, mentioned by Stow (a ceiling bore date "1617"), which stood next to Plum Tree-court on the east side of Shoe-lane, near St. Andrew's Church, as it appeared in the earlier years of last century, when it was occupied by Messrs. Pontifex & Wood, engineers and coppersmiths, for whom the premises were rebuilt. No. 1 presents the Holborn front of Furnival's Inn, as rebuilt *temp.* Charles I., after a design attributed to Inigo Jones. The block shown in the view, from an engraving by Banks, 1818, after a drawing by R. B. Schnebbelie, was pulled down ten years ago for an enlargement, eastwards, of the offices of the Prudential Assurance Company.

THE POST OFFICE LONDON DIRECTORY.

FROM Kelly's Directories, Ltd. (182-4, High Holborn, W.C.) we have received the Post Office London Directory, with London County Suburbs for 1909, the 110th annual issue of a remarkable work, which is so well edited and brought so fully up-to-date that it is a model of what a Directory of a great city should be. The publishers explain that this accuracy is partly due to the fact that the whole volume is kept standing in type and corrections can be made in some of the divisions down to the latest moment compatible with the appearance of the Directory in the middle of December; but they do not mention that the production of such an admirable and indispensable work is the result of the most careful supervision and painstaking labour. We have tested the accuracy of the Directory in several ways, and we have always found it reliable, and it is so well-arranged that what is wanted can quickly be found. The Directory has been increasing so rapidly in size in recent years that the volume was becoming cumbersome, and a desirable alteration has been made this year in its arrangement; the already overgrown proportions of the Directory were increased when the addition was made of the section covering the County of London. Although for many years past the book has been bound in two volumes, this form of publication was so little in demand, we are informed, that it was obvious that the convenience of having all the information within two covers exceeded the discomfort of excessive bulk. With a view of consulting the convenience of the majority of their customers the publishers have increased the width of the pages by adding another column, thereby reducing the number of pages of the complete volume (with County Suburbs) to 3,440, while not curtailing any of the contents of the various divisions. No addition having been made to its height, the Directory can still occupy its accustomed place on the bookshelf. We believe that the Directory in its new shape will continue to meet with the approval which, for the best part of a century, it has deserved.

The Directory is published annually, and may be had in the following forms:—Complete edition, 32s.; small edition, 18s., containing the Official, Commercial, Court, Parliamentary, Postal, and Banking; commercial only, 12s.; trades, 12s.; streets, 12s.; court, 5s.; banking, 3s. It may be had, printed on fine paper, bound together in one volume, at the price of 40s.; or, printed on the usual paper, in two volumes, price 43s. 6d.

A useful linen-backed map is issued with the work, as well as a general index.

GRESHAM COLLEGE, LONDON, AND THE NEW SCHEME.

THE Gresham Committee of the Corporation of London have undertaken to frame a scheme for an extension of the scope and aims of the Gresham Trust. The College was founded by Sir Thomas Gresham, who intended it to be a third University—the University of London. By his will, which he published in 1575, four years before his death, he devised his estate in trust, directing that, after his wife's death, one moiety of the rents, mainly derived from the shops of his Royal Exchange, should pass to the Corporation, and the other moiety to the Mercers' Company for purposes of charity and relief and of maintaining seven lectureships in music, astronomy, geometry, divinity, physic, rhetoric and the belles-lettres, and civil law. The professors—amongst whom have ranked Wren, Hooke, and Dr. Barrow—were to receive 50*l.* a year and to have residential quarters in Gresham's own "mansion house," an extensive range of buildings which, with its almshouses and gardens, lay between Bishopsgate and Old Broad streets, having two courts or quadrangles (very similar in appearance to the Great Court of Trinity, Cambridge), measuring internally 110 ft. by 140 ft. and 37 ft. by 66 ft. respectively. The west frontage to Broad-street extended over 208 ft.; the east frontage was 186 ft. long.

The delivery of the lectures began in June, 1597. The Royal Society often met there until their migration in 1710 to Crane-court, Fleet-street. The buildings, of which there is a bird's-eye view, by Vertue, done for J. Ward's "Lives of the Gresham Professors," 1740, fell into decay, and in 1768 gave way to the (old) Excise Office, an Act having been obtained for making over the site to the Crown for a perpetual rent of 500*l.* per annum. The almshouses were built anew in the City Greenyard, Cripplegate Without. The Excise Office in Broad-street was replaced in 1853-4 by two blocks of offices, Gresham House, designed by Sir Wm. Tite and E. N. Clifton. The lectures were then given in a room in the south-east corner of the Royal Exchange, and the professors' stipends were increased by 50*l.* each in lieu of the lodgings in the old College. Upon the rebuilding of the Royal Exchange new quarters for the College were erected at the corner of Basinghall and Gresham streets, with lecture-theatre, library, professors' rooms, etc., after designs by George Smith in 1842-3. At Lady Gresham's death, 1597, the trust derived a yearly income of 751*l.* from the rentals of shops in the Royal Exchange. In view of its present great increase and of the fact that the existing building is quite unsuitable for later-day requirements and is, indeed, liable to a disaster in case of fire, the Committee will, it is anticipated, provide for the disposal of the site, which is tentatively valued at more than 50,000*l.*

Legal Column.

WORKMEN'S COMPENSATION—AVERAGE EARNINGS.

The Workmen's Compensation Act, 1906, far from simplifying the method by which the amount of compensation is to be calculated, has considerably complicated this question, the Legislature having devised a series of problems which even lawyers fail to work out satisfactorily. This is a matter much to be regretted since the original idea of the Legislature was to substitute compensation for uncertain damages and to enable that compensation to be calculated by reference to scale by any rustic without legal advice. This end should have been accomplished, and it is a pity more consideration was not given to the subject, as both employers and workmen are forced into litigation in order to ascertain their liabilities and dues.

Amongst other provisions, in paragraph 2 of the first schedule it is provided that "Average weekly earnings shall be computed in such manner as is best calculated to give the rate per week at which the workman was being remunerated." And paragraph 2 (*c*) also provides that "Employment by the same employer shall be taken to mean employment by the same employer in the grade in which the workman was employed at the time of the accident, uninterrupted by absence from work due to illness or any other unavoidable cause."

In the case of Anslow *v.* Cannock Chase Colliery Company, Ltd., the Court of Appeal have recently again considered this question. A collier had been employed in the same grade by the same employer for twelve months preceding the accident in which he sustained injury, and during that period his remuneration had amounted to 68*l.*, but he had only actually worked for thirty-three weeks out of the fifty-two weeks. There were fourteen weeks during which work in the mine was stopped and during which he could not work; two weeks were Bank Holidays and Wakes weeks, and all these periods of inactivity were recognised incidents in the employment; but the man had been absent two weeks from illness and one week on a holiday besides. The Court held that his average earnings were to be ascertained by applying the formula $\frac{36}{52} \times \frac{68}{33}$.

This adopted the principle laid down by Lord Justice Fletcher Moulton in Bailey *v.* Kenworthy, Ltd. (1907), that interruptions normal and incident to the employment should not be included in calculating average earnings, but that accidental interruptions should not affect the rate of remuneration.

A difficulty arises in the interpretation of paragraph 2 (*c*) since it is not certain what is intended by "uninterrupted by absence from work due to illness or any other unavoidable cause." This may mean that such periods are not to be included in making the computation, or that they mark a break in continuity and form a new departure. There are expressions in Lord Justice Fletcher Moulton's judgment, which seem to show that he inclined to the opinion that such interruptions prevent the anterior period from being taken into consideration, and he also limited the "unavoidable causes" to those *ejusdem generis* with illness.

In all probability the opinion of the House of Lords will have to be taken on the meaning of the schedule of an Act intended to be fr

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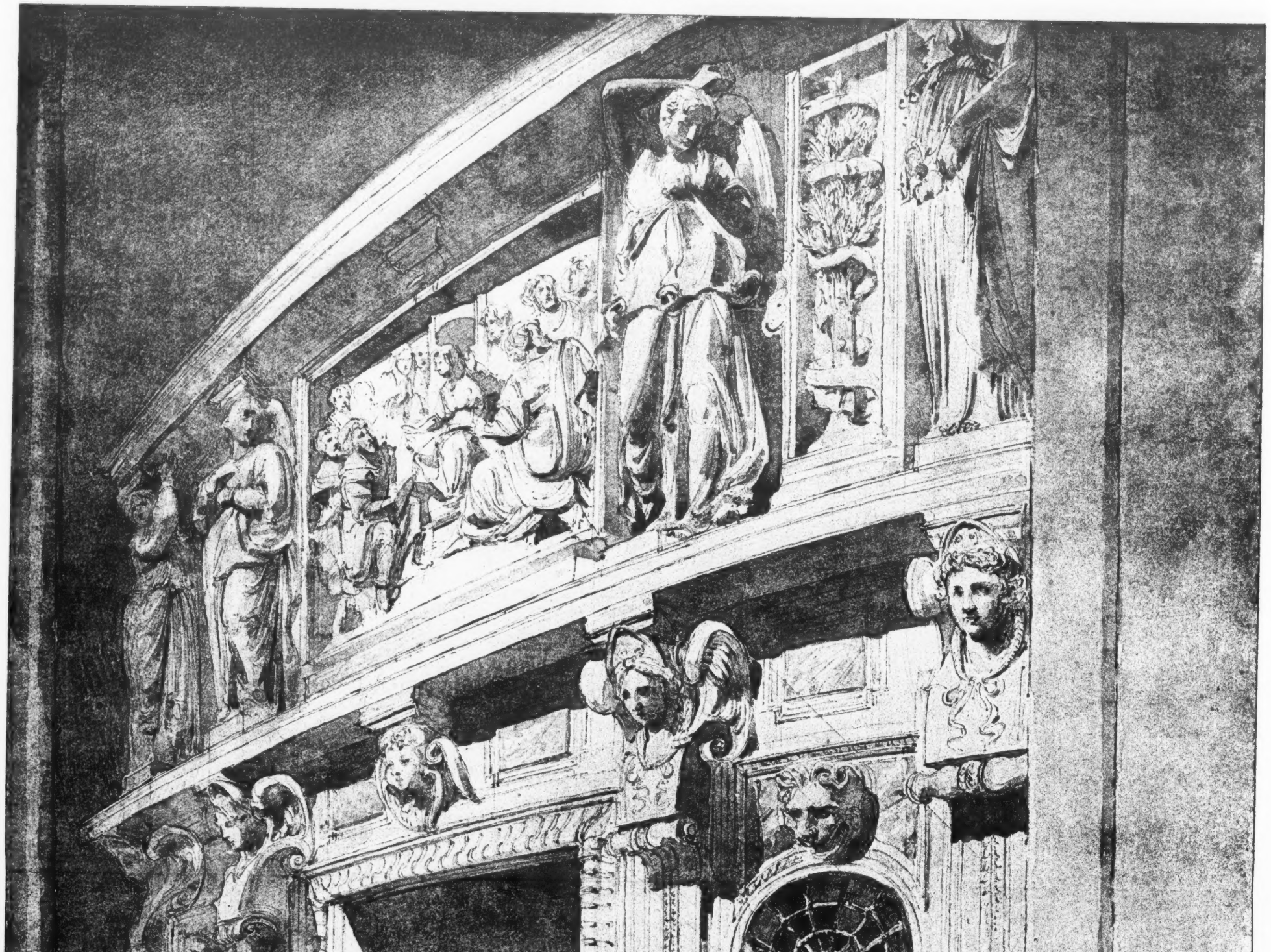
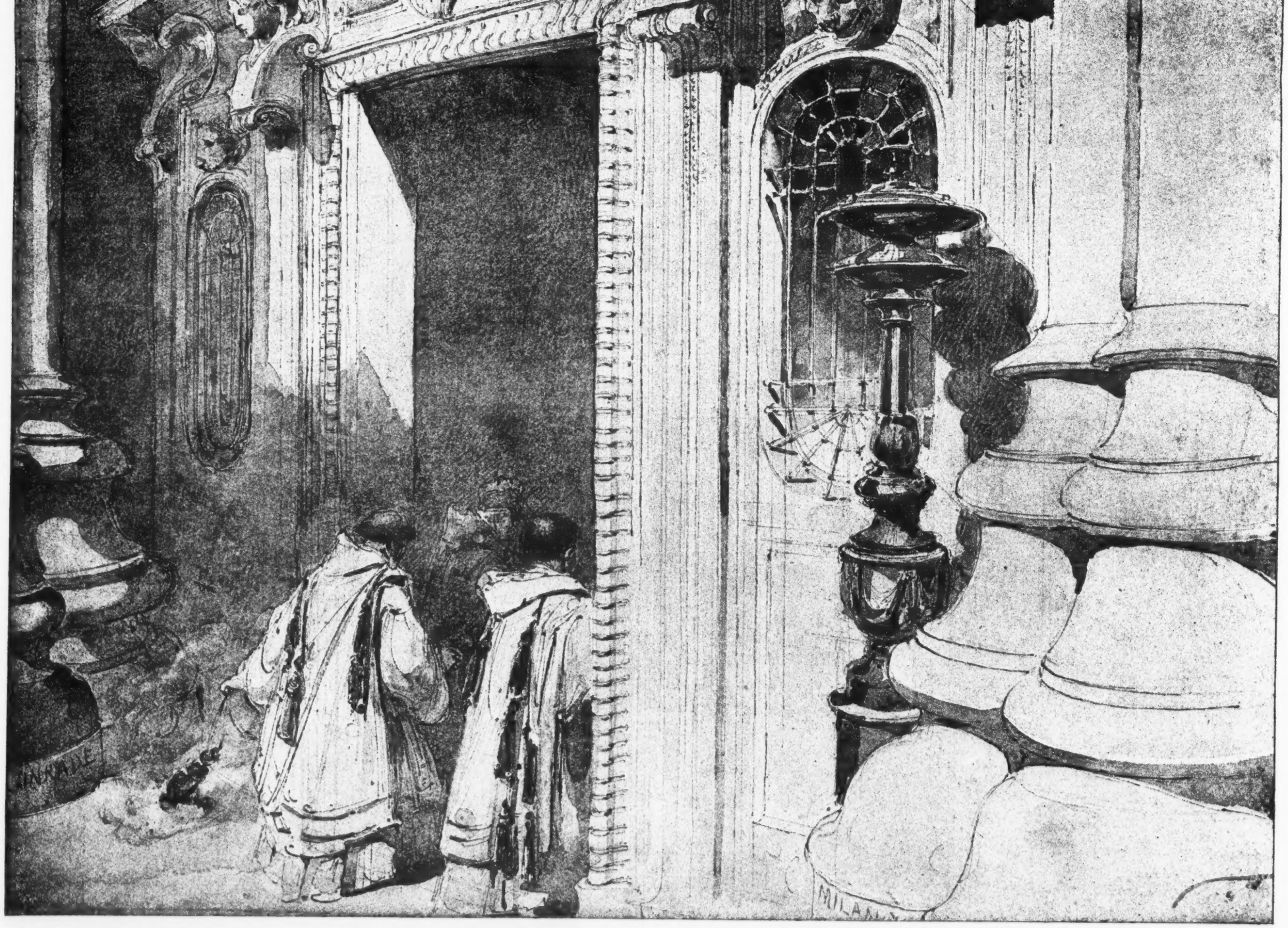
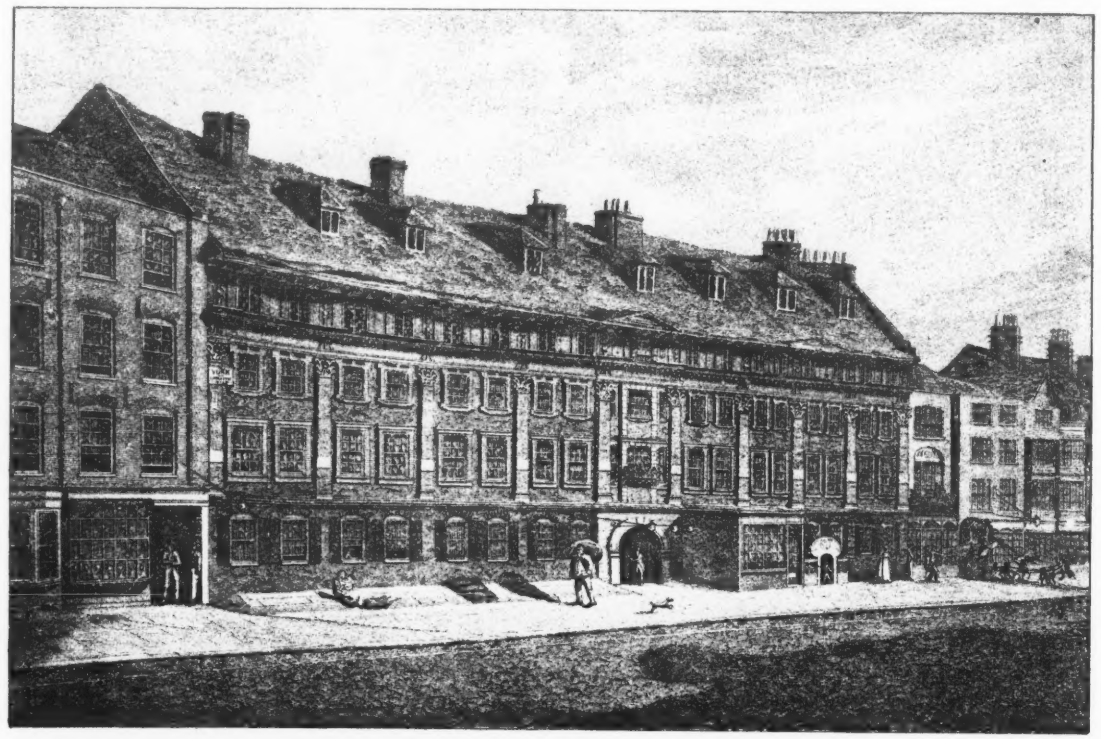


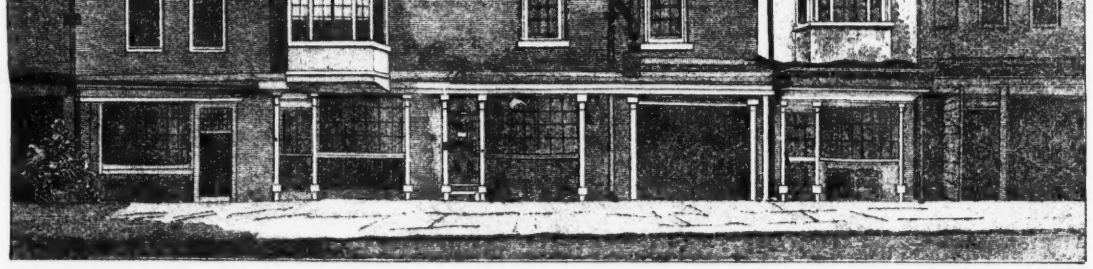


ENTRANCE TO CHOIR, MILAN CATHEDRAL.—From a Drawing by Mr. H. C. Conrade.



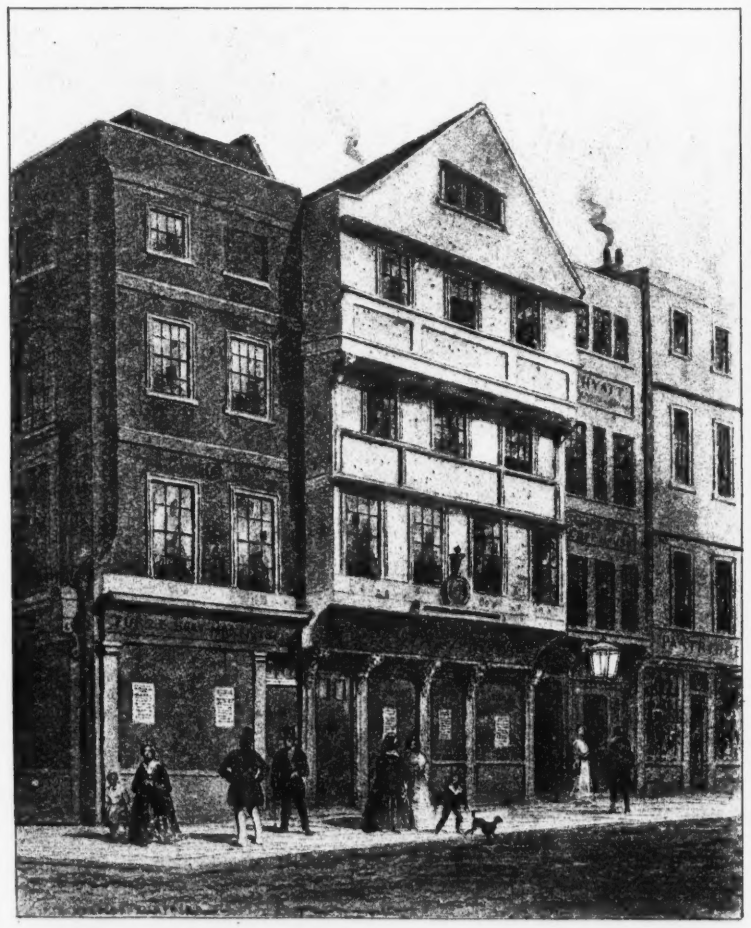
1. OLD FURNIVAL'S INN, HOLBORN.

2. OLD HOUSES, FETTER LANE.



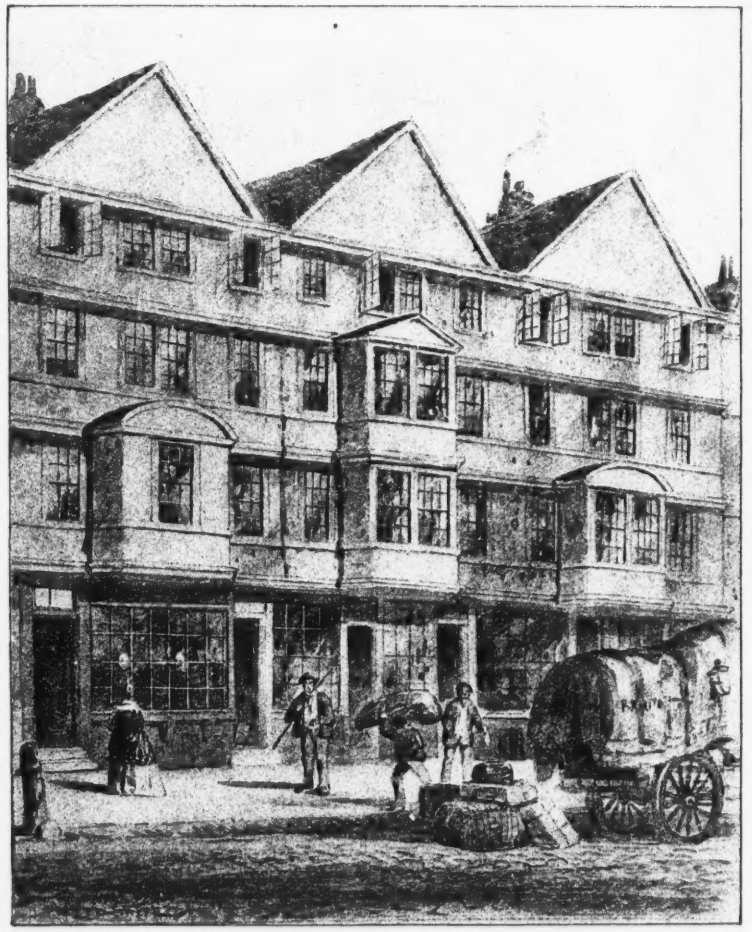
3. OLDBOURN HALL, SHOE LANE.

4. NAG'S HEAD INN YARD.



5. OLD HOUSES, CHANCERY LANE.

6. DRYDEN'S HOUSE, FETTER LANE.



7. OLD HOUSES, FETTER LANE.

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from all legal technicalities, and in the meantime all that can be said with certainty is that the attempt to provide a certain means of ascertaining compensation has proved a miserable failure.

ROAD AUTHORITIES AND RAILWAYS.

Last week we commented upon a case, Attorney-General *v.* Midland Railway Company, in which the point was raised whether there was a liability at common law for railway companies to maintain the roadway on approaches to their bridges, but the point was not decided, as the Court held such a liability to be imposed by the express terms of the statute under which the company took their powers. Since the decision of that case the same question has arisen in the case of Hertfordshire County Council *v.* Great Eastern Railway Company with reference to level crossings. In this case also the railway had been constructed under a private Act (6 and. 7 Will. IV. cxiii.) before the Railways Clauses Consolidation Act, 1845. This Act contained powers enabling the railway company to alter the course of or to raise or sink roads in order to carry them more conveniently over or under the railway, and from time to time to alter, repair, or discontinue the said works. In constructing the railway certain roads had been raised in level to cross the railway on level crossings, and the portions so raised were the "approaches" in question. Inside the gates to the level crossings the company had always repaired the roads, and, until some short time before the action was brought, the approaches also. The roads were main roads. The Court, having reviewed all the cases decided upon this question, held that the railway company were liable to maintain and repair the approaches on the common law principle that wherever a body of persons are authorised by statute to cut through a public road they are bound to do what is necessary to make and maintain an equally convenient passage for the public. The distinction between this case and Attorney-General *v.* Midland Railway Company is that in the latter case the liability was held to be imposed upon the company by the express terms of the statute which authorised these undertaking. Under the Railways Clauses Consolidation Act, 1845, where a railway company was authorised to carry the line on a level across the road it was held in West Lancashire Rural Council *v.* Lancashire and Yorkshire Railway Company (1903) that sect. 16 of that Act did not compel the railway company to maintain the incline of the approaches, but the common law duty was not argued in that case, and it may be doubtful how far it now is good law. Under that Act level crossings are not permitted unless specially provided for in the special Act, and, as we pointed out last week, where the road crosses the line on a bridge the liability of the company as to the approaches is expressly provided for in sect. 46.

REVOCATION OF PATENTS.

The first two decisions given by the Comptroller-General of Patents under sect. 27 of the Patents and Designs Amendment Act, 1907, have excited some comment, and two correspondents in the *Times* have criticised them on the ground that the Act, now it is being administered, is not a protective measure, but rather tends to encourage Free Trade. These correspondents appear to have taken rather too narrow a view of the decisions delivered. The two patents in question related to a process of manufacturing thin imitation stone slabs or tiles. The patent seems to have been granted to a foreigner, and it was being worked under licences granted by the patentee in France, Germany, and Belgium, the latter country having been granted an exclusive licence as regards this country. In whose interests the application for revocation was made does not appear, but the applicant bears a foreign name. The patent had never been worked in this country, and it was alleged that it could not be profitably worked here on account of the increased cost of both labour and material, and it was stated that advertisements had been inserted and offers made to dispose of the patents or to enter into working arrangements with firms in this country, but they had not resulted in business. The Comptroller-General held it was not proved that the industry could not be carried on commercially in this country, and that offers to sell the patents were no answer to the requirements of the Act to manufacture in this country, and he revoked the patents. The Comptroller observed that if the patents were revoked it was possible that a new industry would be established in this country, but that in any case beneficial results would ensue, for it would free the trade in the patented article and enable French and German manufacturers to import it to this country. The two correspondents whose letters appeared in the *Times* of 26th ult. appear to have seized upon those latter expressions as indicating that the Act will discourage home manufacture, but the facts appear hardly to justify their deduction. They have omitted to regard the fact that the Comptroller pointed out that it was open to anyone to now work the patents in this country, but that failing this the position would be improved since, instead of being tied to one country as a source of supply, consumers of the patented article would be able to seek an open market in the three countries, with the prospect of competition lowering the price of the patented article.

A more important point is raised by Sir Joseph Lawrence in a letter to the *Times* of 25th inst., who draws attention to the proviso to sect. 27 that no order for revocation shall be made "which is at variance with any treaty, convention, arrangement, or engagement with any foreign country or British Possession," a proviso which may often render the provisions of the section incapable of being enforced.

Competition News.

NEW BUILDINGS FOR THE FRENCH ADMIRALTY.

The French Government have purchased from the Paris Municipality a large site in the Avenue Suffren, bordering on the Champs de Mars, for the erection of buildings to contain the central marine stores, the archives, the Upper Naval School, the School of Marine Engineering, and other services connected with the navy. The buildings have been the subject of a competition open to French architects, and the drawings were exhibited for a few days in a Gallery in the Petit Palais. Among them the design of M. Patouillard-Demoraine, an architect holding a Government diploma, was especially attractive, and it is to this design that the jury (MM. Daumet, Pascal, Laloux, and Bonnier) have awarded the first premium. The second premium has been awarded to MM. Duval & George, of Paris; the third to M. Chaussemiche (Paris); and the fourth is divided equally among MM. Sortais, Grisolia & Guidetti, Bréasson, Duquesne, and Leprince-Ringuet (all of Paris). The buildings are to be commenced shortly.

INSTITUTE OF ARCHITECTS.

At the business meeting of the Institute, on Monday next, Mr. K. Gammell is to move the following resolution:—

"That the Council of the Royal Institute of British Architects shall forthwith give effect to the will of its members, as expressed by the resolution passed in open meeting on January 7, 1907, whereby this Institute showed its disapproval of the principle of limited competitions for public buildings erected with public moneys, by forwarding a copy thereof to the Council of every county, county borough, and borough in England and Wales, before April 10, 1909."

COLCHESTER TECHNICAL INSTITUTE.

In this competition the 1st premium (30 guineas) has been awarded to the authors of design No. 16—Messrs. J. Newman & Jacques, 2, Fen-court, Fenchurch-street, London (estimated cost, 16,500*l.*); the 2nd premium (20 guineas) to the authors of design No. 12—Messrs. Russell & Cooper, 11, Gray's Inn-square, London (estimated cost, 14,204*l.*); and the 3rd premium (10 guineas) to the author of design No. 9—Mr. G. H. B. Gould, 9, Tower-street, Ipswich (estimated cost, 12,800*l.*). The Committee state that owing to the excessive cost of the design placed first by the assessor, Mr. Paul Waterhouse, they are unable to appoint the authors as architects. As design No. 8 is the only one complying with the conditions as to price, and will, with slight modifications, satisfactorily provide the accommodation required, the Committee are considering the question of appointing the authors, Messrs. Cheers & Smith, of Blackburn, as architects. All the plans will be on view in the Grand Jury Room at the Town Hall, Colchester, on Tuesday, January 5, between the hours of 10 and 5, after which they will be returned to the various competitors.

Trade Catalogues.

MESSRS. APPLEBYS send us their catalogue of concrete mixers, of the continuous and intermittent types operated by steam, electric, and hand power. Two forms of continuous mixer are illustrated, one mounted on a steel girder frame fitted with flanged wheels for use on rails, and the other a stationary apparatus with an elevator for the supply of materials to the hopper. Both of these machines perform the operation of mixing in a rotary cylinder having internal blades by which the materials are turned over and carried in a spiral direction from one end to the other. Intermittent or batch mixing machines are represented on succeeding pages by apparatus comprising a cone-shaped drum revolving continuously, and the necessary auxiliaries, and arranged to deliver either from the side or the end. This variety of mixer is made in several patterns and sizes, which should suit all requirements. Other intermittent machines illustrated and described are those on the "paddle," Messent, and Lee systems. The catalogue is a useful guide to concrete-mixing machinery, although, of course, referring only to the appliances made by the firm mentioned.

Correspondence.

STEEL-FRAMED CONSTRUCTION.

SIR,—Having perused your excellent leader on page 698 of last issue, I notice that you refer to Clause 29 of the proposed Bill; and I am of opinion that very few architects will be able to prepare the detailed drawings and details with full calculations of the loads; in every case the assistance of experts in the engineering profession will be obtained, as is the case with many ordinary buildings into the construction of which steel largely enters.

The plans and calculations should be submitted to and approved by the engineers of the London County Council, as the District Surveyors are architects and surveyors, not engineers, and the increased remuneration of a fee and a half will not be more than sufficient remuneration for the extra time and trouble entailed by the superintendence of such buildings. There will be no margin to allow for the payment of a specialist's fees.

It has been the custom for the Council to approve of all special buildings not in accordance with the rules of the 1894 Act, and it will be well to continue this course for the benefit of the profession and the public.

SURVEYOR.

SIR,—The rules proposed by the London County Council to regulate the construction of steel-framed buildings in the district under their control, mark, as you point out in your article in this week's issue, a real step in advance. In addition, however, to the points dealt with in your article, there is, it seems to me, another defect also, which, in the case of certain classes of buildings, will render the new rules of but little advantage. I refer to premises erected for manufacturing purposes, the design of which is now much hampered by the limitation of their cubic content by the 1894 Act.

Modern manufacturing methods demand large, uninterrupted floors, lofty and well-lighted. The height to which such buildings can be carried therefore is limited, not so much by the stipulations of the Building Act as to thickness and construction of walls, as by the restriction placed upon the cubic content. It must not be forgotten that London is still one of the largest, if not the largest, manufacturing

centre in the world, and if it is to retain its position, facilities must be provided to enable its factories and workshops to be brought up to the standard of other districts. A restriction limiting the size of buildings to 250,000 cubic ft. may be of value in crowded districts, such as the centre of London, in preventing the spread of fire, but the premises referred to are generally situated in the outer districts, and in any case have to stand in more or less isolated situations in order to obtain the necessary light, which is usually as great a consideration as spaciousness.

To enable full use to be made of the proposed new regulations, it is necessary therefore that they should be accompanied by some alteration in sects. 75 and 76 of the 1894 Act, which limit the size of buildings, and I would suggest that the Council take power to permit the construction of buildings of any size whatever, provided always that they are satisfied that sufficient means of escape are afforded, and that proper provision is made in the way of open space or otherwise, so that there may be a reasonable hope of isolating any outbreak of fire which may occur. The new regulations, with the protection to steelwork which they enjoin, should greatly increase the chance of checking an outbreak of fire within a building of steel skeleton construction, and in return it is only reasonable that some extension in size should be allowed in order to meet a much-felt want. J. G. MATHIESON.

THE SMALL HOLDINGS AND ALLOTMENTS ACT.

SIR,—I am gratified that you have, in your legal column of the 12th ult., taken note of my "Memorandum for the Guidance of Surveyors* and Local Authorities on the Small Holdings and Allotments Act, 1908."

May I further emphasise the point which you make regarding the mischief arising by the total elimination of expert evidence. This is particularly open to criticism, since the person directly interested may himself be excluded from the inquiry, or, if allowed to appear, may be unable to adduce any evidence to show the effect of the proposal upon the amenities or upon the value of his property. So far as I know, it is a provision without statutory precedent.

JOHN F. MCILWRAITH, P.A.S.I.

THE ROYAL INSTITUTE OF THE ARCHITECTS OF IRELAND.

SIR,—In our report of the annual general meeting of this Institute sent to you, the names of Messrs. A. E. Murray and E. Bradbury were by an oversight omitted from the list of Council for 1909.

I should be glad if you could publish this.

JAMES H. WEBB, Hon. Sec.

TRIBUNAL OF APPEAL CASE:

POPULAR PASTIMES, LTD. *v.* DISTRICT SURVEYOR.

ON Wednesday last week the Tribunal of Appeal further considered the appeal of Popular Pastimes, Ltd., under sect. 79 of the London Building Act, against the action of Mr. J. Todd, the District Surveyor, in declining to approve of the construction proposed in converting 31, Aldgate High-street, into a public building, as shown on the plans submitted by Mr. W. J. Almond. Mr. Gruning (one of the Tribunal) was again absent through illness. Mr. Cunningham Glen and Mr. Bethune appeared for the appellants, and Mr. Daldy for the District Surveyor.

Mr. J. Dane, for twenty-eight years in the service of the London Fire Brigade, and for fifteen years in charge of the Whitecross-street station in the City, said since he had retired he had been engaged in advising with regard to fire matters. He visited the premises in Aldgate the previous day, and came to the opinion that if the plans of the appellants were carried out, including the proposal for an exit on the east side, the public using the building would be amply protected.

The Chairman pointed out that this would be subject to the basement being closed.

Mr. Bethune said he understood the suggestion was that the basement should not be used for a certain time, and then the appellants should come back to the Tribunal if they wanted to use it.

The Chairman said it would not be a question of coming back to the Tribunal. If the plans were passed the basement would be shut off in such a way that it would require an alteration of the building, and the owners would have to go to the London County Council.

Witness said he had considered the proposed new roof for the cinematograph hall, and suggested that one shaft of about 10 by 7 should be put in in the north end, and a pipe should be put over the lantern-box to the roof.

Mr. Daldy (for the respondent): You know it was intended first to carry the cinematograph hall up to the roof, and now it is proposed to make a new lower roof. Which, in your opinion, is the safer proposal?—Having the lower roof.

Questioned as to why he had come to this opinion, witness said he thought from the point of view of safety from fire it would not make much difference which proposal was adopted. He did not think there would be more than 400 people in the hall at a time.

Mr. Daldy said he was instructed that the hall would hold 3,000 people. Taking it that there were 2,000 people in the building, would witness consider the exits were sufficient?

Witness said he should. There were six exits provided for the building, three on the ground floor and three on the first floor, and the exit on the east side was only 23 ft. from the street.

In re-examination by Mr. Cunningham Glen witness expressed the opinion that the building as a whole, when altered as contemplated, would be safe.

Mr. Cunningham Glen read the County Council specifications for a cinematograph chamber.

The Chairman said the specifications might be all right, but who was to see whether they were carried out. If this was a building which would not be subject to supervision by the County Council, then the Tribunal were bound to take greater precautions than if they were to have supervision.

Mr. Daldy: You might say if this building was to be supervised by the County Council you would be prepared to have no exit on the north side.

The Chairman: Yes; it is a serious matter.

Mr. Glen said he appreciated the point. They wanted to satisfy the Tribunal that what was proposed would be permanently safe for the use of the public.

Mr. S. Gamble, M.Inst.C.E., and second in command of the London Fire Brigade, said he had charge of the inspection department of the brigade. He had some 400 places of public amusement and other public buildings under his supervision. He had inspected the buildings in question, and seen the plans showing how they were to be converted, and he considered them very unsuitable for the purpose proposed. The exits as shown were insufficient, owing to the fact that the premises were surrounded by buildings, the whole of which, so far as he could see, had flues abutting on the wall of the premises. The floor of the building was entirely supported on joists with a space underneath. There was a cellar under the north end, and one under the south end, but the spaces which existed under the floor would allow of a fire travelling from one end of the building to another before being discovered. If the plans were allowed, a proper exit at the north end should be insisted on. As to the proposal for putting the ceiling to the cinematograph hall, he considered that the first proposal to carry the hall up to the roof of the building was the best.

In cross-examination by Mr. Glen, witness admitted that he was only a short time inspecting the building, but it was more than five minutes. If the basements were properly bricked off the fire would not travel, but, speaking with experience of theatres where the managers were most anxious to do all they could, he knew that constantly workmen would make holes in walls and not fill them up again. He held that every building should be constantly inspected. He considered that fire might arise from the storage of materials in the basement and from the side-shows.

Counsel was proceeding to examine witness on the nature of the side-shows to be given when

The Chairman pointed out that they had to pass plans for a building which might be used for any purpose, and there would be no authority controlling it. It had been repeatedly put before them that the County Council would have no jurisdiction over the purposes for which it was used.

Mr. A. R. Dyer, M.Inst.C.E., assistant divisional officer of the London Fire Brigade, also expressed the opinion that the premises were unsuitable for the intended purpose.

The parties having agreed to accept the decision of the two members of the Tribunal,

The Chairman said they had come to the decision that they could not pass the plans of the building. It was quite impossible, in the face of the evidence they had heard. They thought costs should be allowed to the District Surveyor for that hearing.

Mr. Cunningham Glen asked that the Tribunal would allow the matter to remain open so that his client could negotiate with the District Surveyor and prepare plans which would be accepted.

The Chairman said the Tribunal felt that they must exercise exceptional care with regard to buildings for a business of this description, because the appellants wished to get out of any jurisdiction of the County Council to control its use. It was a very serious responsibility to take to pass a building with any chance of defect as regarded exits, when they knew that these exits might, by bad usage or negligent user, without supervision, be completely destroyed.

Mr. Glen asked if his client could have the opportunity of providing, if he could, an exit at the northern end.

The Chairman said that, subject to anything the District Surveyor might say, he did not think there would be any objection to adjourning the matter again. As regarded the District Surveyor they thought he had acted most reasonably, and should not be brought there constantly without being paid.

Mr. Todd intimated that he had no objection to an adjournment.

Mr. Glen expressed the hope that the District Surveyor would give them some assistance in the direction of showing what would be satisfactory.

The Chairman: It is difficult to pledge ourselves to any hypothetical scheme. You have heard the evidence of Mr. Gamble, which, speaking for myself, I rely upon entirely.

The Tribunal awarded 21*l.* costs against the appellants, and the case stood adjourned.

MODEL SCHOOL PLANNING.

THE Report of the Consultative Committee appointed by the Board of Education to inquire into the subject of the attendance at school of children under five contains a summary of the evidence supplied by Mr. Felix Clay, the Architect of the department. Below are the features of his evidence:—

Approval of Plans for New Schools.

Plans of new buildings, or alterations to existing ones, have to be submitted to the Board of Education in the case of all schools receiving grants. A personal interview with the local architect is always arranged if there is need for it. The heating and ventilation arrangements always receive careful attention. No particular system is officially recommended by the Board for universal application. It would be difficult to refuse approval to any system, but if it were found inadequate in practice alterations would be required. Nearly every ventilating engineer has his own ideas on the subject, and there is no arrangement which can be said to be perfect.

Small Schools.

In the case of small schools the Board insist upon a good arrangement of windows, an adequate supply of inlets for fresh air, and extract ventilators in the ceiling, or, if there be an upper story, in the chimney breast. Beyond this there is little to be done in small schools in the matter of ventilation. The windows provide the best means of ventilation in such schools, and a sensible teacher can keep the rooms in a very fair condition with these alone. The Board, therefore, require to be satisfied that the windows are of a good pattern. Ventilators do not do a great deal, but are a safeguard in case the windows are not properly used. Teachers as a rule do not use the windows properly. Well-constructed windows can be kept open almost all the year round if the heating arrangements are adequate. There should be a supplemental window, if possible, for ventilation purposes on the opposite side of the room to the main lighting windows so that the air can be kept fresh by means of a cross-draught at the top. It may be taken that in the schools recently erected the Board have been able to secure a sufficient amount of windows made to open.

Heating.

Small schools are usually heated by open fires, but stoves with open fireplaces, such as the "Musgrove," are also allowed. Close stoves are not permitted in new schools, but it is difficult to get rid of them where they already exist. They get red-hot and vitiate the atmosphere. Open stoves do not do so, and have the advantage of greater heating power than fires. In quite a small room—that is, one which would accommodate say thirty children—a single fire gives sufficient heat on a cold day without undue restriction on the ventilation; but in larger rooms one fire is not enough at all times. The best plan for large rooms is to have a fire and also a line of hot-water pipes along the side of the room furthest from the fire. The Board, however, feel that they cannot insist both on fires and pipes. Either is accepted provided it is adequate. There is also the danger, when both are present, that only the pipes will be used, and if these had been put in with the object merely of supplementing the fire they would not be adequate by

*See "Legal Column," page 651 in last volume. —ED.

themselves. For this reason the best method to recommend for large schools is heating by radiators alone, in which case ample provision for the admission of fresh air must be made. The actual size of the radiators is left a good deal to the discretion of the local education authority. If they considered them adequate and the Board differed, the proposed pipes would probably be accepted subject to the right of the Board to insist upon additions after the school was opened if they were found to be deficient. There is, however, as a rule, a good deal of margin provided, and if the weather is very cold the furnace can generally be made to heat the pipes to a higher degree for a time.

The Plenum System.

The Plenum system has many strong supporters who are able to show that chemically a fairly pure atmosphere is maintained by it. Mr. Clay, however, was strongly adverse to its use for school purposes. In the Plenum system warmed air is introduced under pressure into the upper part of the room; this, being at a higher temperature than that already in the room, spreads over the ceiling, and, being under pressure, produces a gradual downward movement, passing out of the room at the floor level. Certain objections to the system are the warming of the rooms by hot air only; this requires raising the incoming air to a temperature that seems to destroy some of its invigorating qualities and produces a somewhat enervating effect. The walls and furniture of the room being cold, there is a radiation of heat from the persons in the room. Perhaps the chief objection is that for the proper working of the system it is absolutely necessary to keep the windows closed, and in order to ensure this the windows are not as a rule made to open; this has a very serious disadvantage, in accustoming the children to sit in rooms with the windows shut. In America, from which country this system comes, it is necessary to keep the windows shut during a part of the year; but in this country there are not many days when properly managed windows cannot be opened—and for most of the year they can be opened freely—so that it is not necessary to go to great expense to bring in air that has been filtered, heated, and moistened, and, unless the ducts are kept very clean, apt to be dirtied as well. Perhaps in the case of a school close to a factory which emitted a great deal of dust, some such arrangement might be desirable. The cost of installation in a school of 1,000 would be from 1,500*l.* to 2,000*l.*

Central Hall System.

Under this system the classrooms are placed round a central hall. Cross-ventilation can, however, be obtained if the roof of the hall is brought down below the ceiling of the classrooms, and windows are placed in the room walls in the space above the roof of the hall. This involves a somewhat extensive amount of gutters, and does not secure the full use of the windows on two sides, such as is aimed at in the Staffordshire type of school (*i.e.*, windows on each side, so that whichever way the wind is blowing one set of windows can be kept open). A different treatment is required where there are two or more stories.

South Aspect.

Attention is always drawn to the desirability of having the windows on the south side, especially in the infants' schools. In schools built on the central hall system, with classrooms all round, however, some rooms are bound to face the wrong way. Many schools built several years ago had the windows on the north side; this is accounted for by the fact that twenty years ago the north light was thought to be the best light for classrooms.

PROJECTED BUILDINGS IN THE PROVINCES.

ALTON (Hants).—Convalescent home. Mr. G. Hartfree, surveyor, Alton.

Berkeley (Glos.).—County school. Mr. R. S. Phillips, The Cross, Gloucester.

Birmingham.—Proposed police-station, Allison-street (17,000*l.*), Mr. E. O. Smith, Town Clerk; proposed fire-station, Albion-street (11,170*l.*), Mr. T. G. Price, architect, Union-chambers, Temple-row; Mr. T. Elvins, builder, Naden-road, Soho-hill, Birmingham.

Bitton (Glos.).—School. Mr. R. S. Phillips, The Cross, Gloucester.

Cap Coch (Aberdare).—School. Mr. T. Roderick, architect, 23, Clifton-street, Aberdare.

Chichester.—School (10,000*l.*). Mr. F. Lobley, architect, Guildhall, Chichester.

Creaton (Northants).—Sanatorium. Mr. F. Dorman, architect, 5, Mercer's-row, Northampton.

Dunstable. — School. Messrs. Gotch & Saunders, architects, Bank-chambers, High-street, Kettering.

Folkestone.—New grammar school. Mr. A. M. Nicholls, Borough Engineer, Folkestone.

Glasgow.—Nine houses, Carmunnock-road, Mr. R. Henderson, architect, 80, Mount Annam-drive, Mount Florida, Glasgow; offices and warehouse, Oswald-street, for Stewarts & Lloyde, Ltd., tube manufacturers, 41, Oswald-street, Glasgow; timber store, care of Dobbie's Loan, and Kennedy-street, Mr. J. Cochrane, jun., 60, Dobbie's Loan, Glasgow; tenements of dwelling-houses and offices, Fotheringham-road, Pollokshields, Glasgow, Mr. R. Henderson, London-road, and Crawford & Eadie, house agents, 58, Bath-street, Glasgow.

Hereford.—Additions to Corn Exchange. Messrs. Groome & Bettington, architects, Palace-chambers, King-street, Hereford.

Hounslow.—Laundry, London-road, Mr. C. H. Samson, architect, The Laurels, Taunton; cemetery chapel, Sutton-lane, Messrs. Nowell Parr & A. E. Kates, architects, Brunswick House, Brentford; furnace and chimney shaft, Ivy-road, Messrs. Nowell Parr & A. E. Kates, architects, Brunswick House, Brentford.

Isleworth.—Ten cottages, Worton-road, Mr. H. Harris, architect, Mill Platt-avenue, Isleworth; new story to back addition, St. Vincents, Witham-road, Messrs. W. Mills & Son, builders, Westcombe Park Station, S.E.

Luton (Beds).—Pumping-station, Mr. S. F. L. Fox, Borough Engineer, Luton; school (1,000*l.*), Messrs. Brown & Sons, architects, 9, Castle-street, Luton.

Malvern Link (Worcester).—School. Worcester County Council.

Paisley.—Six houses, Arkleston-road. Mr. J. Wilson, builder, Paisley.

Radford (Coventry).—School (8,000*l.*). Mr. G. Steane, architect, 22, Little Park-street, Coventry.

Sligo (Ireland).—Branch for Hibernian Bank. Manager, Head Office, Dame-street, Dublin.

Stourbridge (Worcester). — School. Worcester County Council.

Toddington (Beds).—School. Messrs. Gotch & Saunders, architects, Bank-chambers, High-street, Kettering.

LONDON BOROUGH COUNCILS.

Battersea.—The sum of 73*l.* is to be spent in repairing works on the Latchmere Estate, and various roads in the borough are to be repaired and relaid at an estimated cost of about 450*l.* A quantity of granite setts in Culvert-road depôt are to be redressed at a cost of 175*l.*

Fulham.—In connexion with the widening of Stanley Bridge the Engineer of the London County Council found that the work would involve either the complete diversion of a 36-in. main belonging to the Gas Light and Coke Company, or the inclusion of the said main in the structural work, which would raise the apex of the present surface of the roadway some 10 in. The latter course has been adopted in the plans on account of the heavy cost (estimated at 600*l.*) which would be incurred in diverting the main. The local authority strongly objects to the proposed raising of the surface of the bridge, and the consequent steepening of the gradient on the Fulham side, and is of opinion that the main should be diverted so that the present level of the bridge may be maintained as nearly as possible. A portion of the depôt yard at Munster-road is to be paved with old wood blocks, at an estimated cost of 450*l.*; 190 yds. of sewer in Caroline-place is to be relaid, the cost being put down at 320*l.*

Stepney.—As H.M. Office of Works have decided in future to take current from the Borough Council and not, as at present, from the City of London Electric Lighting Company, for consumption at the Tower of London, the company do not think it worth their while to incur the expense of an action which was commenced by the local authority to restrain them from encroaching upon their area of supply. The settlement which has been arrived at is that the company allow the injunction to go and pay the taxed costs. The necessary main to supply the current is being laid down. The Works Committee propose to pave certain streets with granite setts at an estimated cost of 5,212*l.* The Central (Unemployed) Body for London is to be approached with a request that they grant 20,000*l.* towards the cost of laying silent paving in front of places of worship, schools, etc. To substitute silent paving everywhere in the borough would cost 50,000*l.*

ENLARGEMENT OF CLUB PREMISES, SOUTHEND.—The premises of the Southend Conservative Club are being enlarged at a cost of about 3,000*l.* The additions, which have a frontage of 40 ft. and a depth of 100 ft., will include a hall with seating accommodation for over 700; cardroom, billiard-room, lounge-bar, etc., with a rifle range in the basement. The building is being erected by Messrs. W. G. Leaney & Co. from plans by Messrs. Burles & Harris.

Obituary.

MR. FAWCETT.

We regret to announce the death, on December 27, at his residence, No. 3, Scroope-terrace, Cambridge, of Mr. William Milner Fawcett, M.A., F.S.A., V.D., in his 76th year. Mr. Fawcett, a son of the Rev. James Fawcett, late vicar of Knaresborough, was born at Woodhouse, near Leeds. From Leeds Grammar School he proceeded to Jesus College, Cambridge, as a foundation scholar, and graduated thirty-second Senior Optime in 1859; he subsequently became a member of the Senate. Mr. Fawcett began to practise as an architect in Cambridge soon after he had taken his degree. In 1866 he was elected a Fellow of the Royal Institute of British Architects, of which he served as a Vice-President for the sessions of 1896-8, and 1899-1900, as a member of the Council for the sessions of 1871-3, 1884-9, and 1900-3, and as representative member upon the Council of the Royal Architectural Museum and Westminster School of Art for 1901-3; and he was elected a member of the Architectural Association in 1885. He was one of the honorary consulting architects of the Incorporated Society for Promoting the Enlargement, Building, and Reparation of Churches and Chapels; in 1861 he was appointed County Surveyor for the county of Cambridge, and afterwards Surveyor to the Cambridge County Council, and in 1871 Diocesan Surveyor for the diocese of Ely. Three years ago he took into partnership Mr. Thomas Dinham Atkinson, A.R.I.B.A., Surveyor to the Dean and Chapter of Ely, under the style of Messrs. Fawcett & Atkinson, of Cambridge. Of Mr. Fawcett's principal architectural works we may mention the following:—In Cambridge—Restoration, 1875, of the east front of Queens'; refacing of the north side of the big court, 1868, rebuilding of the masters' lodge (with an elevation modelled after that of Sawston Hall, Cambs.), 1875, and, 1868-9, the oriel of the Hall, St. Catherine's; additions to Peterhouse and Emmanuel; new buildings, begun in 1884, at King's, between the Hall and King's-lane; together with various work at other Colleges; the Cavendish and the Physiological Laboratories; the new buildings in the south-west angle of the court, Pitt Press, 1893-4; the C.U.B.C. boathouse, and some of the College boathouses and cricket pavilions; Perse School (illustrated in our number of December 13, 1890); Women's Training College; the police-station and other county buildings; remodelling of the gaol, near Parker's-piece; additions to the Addenbrooke Hospital; and the Local Examinations Syndicate's offices, 1887. Mr. Fawcett was the architect of several houses and mansions, including those of East Norton, Longstowe, Six-mile Bottom (near Cambridge), and Breaghwy, in Ireland; also for the building or restoration of a large number of churches—his work in that direction comprised the restoration of the churches of Hinderclay, Suffolk, 1897, and Thelnetham, Suffolk, together with a new chancel roof of Spanish chestnut, 1895; Thurning, near Peterborough, with new roof and underpinning; rebuilding of the parish church, Colne, Hunts., the old masonry being used; Whittlesey, with the tower and spire, 1903; Bassbourne, Cambs., (the tower), 1895; St. Peter's, Barton, near Cambridge, with the vicarage, schools, and schoolmaster's house, 1885, and Oakington, Cambs., 1888. He made the plans and designs, 1897, for the new Grammar School, Wisbech, of which the great schoolroom, with laboratory and science departments, formed the first portion of the scheme; the vicarage at Whaddon, near Royston, 1905; and, at Sudbury, Suffolk, of the North-street Church infants' schools, and enlargement of the SS. George and Gregory Schools, 1900. We may add that Mr. Fawcett was nominated as the assessor, 1901, in the Swansea Harbour Trust Offices competition, brought out an edition of Paley's "Gothic Mouldings," was President, 1894-5, of the Cambridge Antiquarian Society, and was elected a Fellow of the Society of Antiquaries in 1874, and that he took a prominent part in the embodiment and training of the auxiliary forces of the Crown, and during a long period was commanding officer of the headquarters companies of the Rifle Volunteers in Cambridge.

MR. GRUNING.

The death, on the 30th ult., is announced of Mr. Edward Augustus Gruning, F.S.I., of No. 25, Gresham-house, Old Broad-street, E.C. Mr. Gruning was elected an Associate in 1860 and in 1869 a Fellow of the Royal Institute of British Architects, of which he was elected a member of the Practice Standing Committee for 1896-7, a member of Council for 1900-9, and a Vice-President for 1899-1901. In 1868 he became a member of the Architectural Association, to whose New Premises Fund he was a

liberal subscriber; and in 1901-5 he was a member of Council of the Architects' Benevolent Society. In May, 1900, the Council of the Institute appointed Mr. Gruning as member of a joint committee of the Councils of the Institute and the Surveyors' Institution to consider the steps to be taken towards obtaining an alteration in the law in respect of ancient lights; in June, 1901, the Institute Council appointed him to fill the seat upon the Tribunal of Appeal under the London Building Act, 1894, rendered vacant by the death of Mr. Arthur Cates. His services as an arbitrator were often requisitioned—for instance, in a claim preferred four years ago by Messrs. Kirk & Randall against H.M.'s Office of Works for a balance of money alleged to be due to them as contractors for the building of the Post Office Savings Bank, Kensington; and (by appointment of the Corporation of London) in respect of certain leasehold interests vesting in the London Wall Estate, Ltd., arising out of the widening of Blomfield-street; and (by appointment of the London County Council) in the matter of a claim arising out of the construction of the northern high-level sewer in Eastfield-street, Bow, 1906. In conjunction with Mr. T. E. Collcutt he acted as an architectural expert, in 1903, with respect to disputes, as to ancient lights, with the Hotel Cecil. In 1889 Mr. Gruning was the architect for an extensive improvement and enlargement of the German Orphan Asylum, Dalston; in 1902 he was appointed honorary architect for the completion of the Seaside Convalescent Hospital; in 1903 he was instructed by the Managing Board of Earlswood Asylum to examine into and report upon the condition of the fabric occasioned, as was found, by weak construction and insufficient foundation. With the late Mr. E. W. Mountford he was architect of the Northern Assurance Company's buildings in Lothbury and Moorgate-street (ilustrated in the *Builder* of July 27, 1907), and, with Mr. H. A. Pelly, for the entrance and marble halls, and lounge, together with alterations, etc., of Keyser's Royal Hotel, Victoria-embankment, 1901. Mr. Gruning succeeded Mr. Walter Emden as architect for the planning and general arrangement of the interior of the Piccadilly Hotel, and carried out the work in association with Mr. Wm. Woodward. Mr. Gruning was managing director of the Gresham House Estate Company; and he read a paper, reported in the *Builder* of May 3, 1902, upon "Arbitrations" to the Architectural Association.

General Building News.

PROPOSED NEW CHURCH, BATLEY.

It is proposed to build a new church at Mount Pleasant, Batley, at an estimated cost of 7,000*l.*, and plans have been prepared by Mr. Hoare, of the firm of Messrs. Wheeler & Hoare.

PARISH CHURCH, SALTCOATS.

The new parish church of Ardrossan, which has been erected upon a site on Caledonia-road, Saltcoats, gifted by the Earl of Eglinton, was recently opened for worship. The building was designed by Mr. Macgregor Chalmers, architect, Glasgow. In the chancel a stained-glass window by Messrs. Bacon, London, has been placed.

NEW CHURCH, WOLVERHAMPTON.

The Bishop of Lichfield recently consecrated St. Chad's new church in Owen-road, Wolverhampton. The work has been carried out by Messrs. Henry Lovatt, Ltd., from the plans of Mr. F. T. Beck. The church, which will seat 800 persons, has cost about 5,000*l.*

ALL SAINTS' CHURCH, FARNWORTH.

This church is now approaching completion. The plan consists of wide nave and side aisles, a large chancel, transept on the north and chapel on the south side, specially arranged for use for week-day services and with separate entrances. Externally the building is faced with best local pressed bricks, and the windows and other dressings throughout are of red Ruabon terra-cotta, the roofs being covered with blue Welsh slates. The internal walls are plastered throughout, and all inside woodwork is of selected pitch-pine. The heating is by hot water and coils on the low-pressure system. Accommodation is provided for 600 worshippers, and the cost of the complete church being about 5,500*l.* The architect for the work is Mr. Frank Freeman, of Bolton, and the contractor for the present portion is Mr. S. J. Hodgkiss, of Farnworth.

SCHOOL EXTENSIONS, LOSSIEMOUTH.

A higher grade department has been added to the Lossiemouth Public School. The department consists of a classroom and laboratory, there being accommodation for fifty pupils. Mr. R. B. Pratt, Elgin, was the architect for the work, and the contractors were:—Mason, Mr. John Macpherson, Elgin; carpenters, Messrs. A. & R. Dunbar, Elgin; plumbers, Messrs. W. Lyon & Sons, Elgin; slaters, Messrs. Andrew Davidson & Sons, Elgin; painter, Mr. K. M'Gillivray, Lossiemouth; and plasterer, Mr. Colin Menzies, Lossiemouth.

HIGHER GRADE SCHOOL, CHRYSTON, N.B.

A higher grade school has been opened at Chryston by the Cadder School Board. The school has been erected according to plans prepared by Mr. W. B. Whitie, architect, Glasgow, and gives accommodation in four classrooms for 180 pupils, at a cost of about 7,000*l.*

SECONDARY SCHOOL, HEXHAM.

A new secondary school is to be built at Hexham. It will take the name of Queen Elizabeth Grammar School, and will give accommodation for 240 pupils, viz., 120 boys and 120 girls. The architects are Messrs. Oliver, Leeson, & Wood, Milburn House, Newcastle.

BOARD SCHOOL, MOTHERWELL, N.B.

The Dalziel School Board have decided to erect a school in the Knowetop district. The designs are by Mr. James Cowie, architect, and the building will provide accommodation for 1,140 scholars, at an estimated cost of 12,500*l.*

SCHOOLS, HOUGHTON.

New schools have been built at Houghton, Durham. There will be accommodation for 260 girls, 260 boys, and 400 infants. A cookery school for girls is also provided. The architects were Messrs. W. & T. R. Milburn, Sunderland, and the general contractors Messrs. Blackett & Son, Darlington.

EXTENSION OF COMMERCIAL TRAVELLERS' SCHOOLS.

It was announced to the Governors of the Commercial Travellers' Schools on Monday that the new wing of the Pinner schools, erected by the generosity of the Treasurer (Mr. H. Jones), has now been completed, and when equipped will be ready for occupation by the girls. The lower floor forms a spacious playroom, about 70 ft. long by 30 ft. wide, which can be thrown open to the main playground in fine weather. The upper floor consists of a nursing ward, bathrooms, nurses' bed and sitting rooms, and a large day-room for convalescent children. A balcony the whole length of the building is provided to enable the children to enjoy the fresh air during convalescence. New lavatories have also been added. The elevation is of red brick with stone dressings, and is in harmony with the old buildings. The architect is Mr. H. O. Cresswell, F.R.I.B.A., and the builders, Messrs. J. M. Grover & Son.

CAMBRIDGE UNIVERSITY.

With the endowment derived under the will of the late Mr. Mynors Bright, the authorities of Magdalene College have been enabled to proceed with the building of a block for a lecture-room and twelve sets of rooms upon the left bank of the Cam. The plans and designs have been prepared by Sir Aston Webb, R.A.

VICARAGE, CHORLEY.

A new vicarage has been built in connexion with St. George's Church, Chorley. The house comprises drawing-room, study, dining-room, kitchen, scullery, larder, large hall with cloak, lavatory accommodation, and the usual offices on the ground floor; five bedrooms, bath and lavatories on first floor. Mr. Hampson, of Chorley, was the contractor, and Mr. H. B. Moss, of Leyland and Chorley, the architect.

ROWTON HOUSE, NORTH SHIELDS.

The old Wesleyan chapel, in Coach-lane, North Shields, having been purchased by a company, known as Collingwood House, Ltd., has been transformed into a lodging-house on the Rowton principle. The necessary alterations and additions have been made from the plans of Mr. J. C. Maxwell, architect, of North Shields and Newcastle, by Mr. Geo. Leck, of North Shields.

CONVALESCENT HOME, CORK.

In the grounds of Clifton, the residence of Countess Murphy, the foundation-stone was recently laid of a convalescent home for females. The main front of the building will be 94 ft. long, and the return, or kitchen offices, etc., wing will be 75 ft. in depth. On the ground floor are arranged, off a corridor, parlour, nuns' room, oratory, dayroom, refectory, kitchen, scullery, pantry, and servants' room, etc. On the first and second floors are arranged the sleeping-rooms, nurses' rooms, etc. In the upper part of the building rooms are arranged for the servants. The lavatory, house sinks, and water-closets are arranged off ventilating lobbies. Bath accommodation, hot closets, linen closet, etc., are provided. The home is planned to accommodate twenty convalescent patients. The architect is Mr. Samuel F. Hynes, Cork, the builders being Messrs. E. & P. O'Flynn, also of Cork.

HOMES FOR WORKING LADIES, HAMPSTEAD.

With the object of providing ladies with associated homes which shall possess attractive features, combined with moderate charges, steps have been taken to erect within the confines of the Garden Suburb a new group of buildings. The general plan provides for fifty separate residential flats, having a communal kitchen, dining-hall, and sitting and drawing rooms, to accommodate from 100 to 150 occupants. The flats will contain from one to three bedrooms; the rents will vary from about 1*l.* 16*s.* to about 3*l.* 3*s.* per month. The buildings, planned and designed by Mr. M. H. Baillie Scott, will be ranged around a quadrangle having a cloistered walk, with a lawn for tennis and croquet.

EDINBURGH ROYAL SOCIETY'S NEW PREMISES.

As the Royal Institution building on the Mound is to be devoted to the use of the Royal Scottish Academy, it has become necessary for the Royal Society of Edinburgh to acquire other premises. These they have secured at 22 and 24, George-street, in the building which the Edinburgh Life Assurance Company have vacated, and it is expected that the reconstruction of the premises will be completed shortly. The alterations are being carried out under the direction of Mr. W. T. Oldrieve, F.R.I.B.A., of H.M. Board of Works.

PUBLIC LIBRARY, OLD HILL.

The memorial-stone was recently laid of a new public library, which Messrs. Willetts & Sons are erecting at Spinner's End, Old Hill. The work is being carried out to plans prepared by Messrs. Wills & Anderson. The walls will be composed of specially-made thin bricks, with grey terra-cotta dressings, and the erection roofed with felted boarding and green tiles. Heating and ventilation are to be secured by means of a system of low-pressure hot-water, ventilating radiators being fixed at intervals in window recesses. The various departments are all on the ground floor.

WAREHOUSE, WARRINGTON.

A new warehouse and offices are being built for Messrs. Garton in Arpley-fields, Warrington. The premises are being erected from plans prepared by Messrs. J. E. Wright, Garnett, & Wright, architects and surveyors, of Warrington.

BUILDING IN BIRMINGHAM.

In a review of the building done during the past year, the *Birmingham Post* remarks that the building trade is very often the barometer by which the condition of commercial and industrial activity in Birmingham is gauged with approximate accuracy. On all sides business depression is heard of, but nowhere is the cry more serious than in those branches which are associated with the occupation of the builder. Comparatively few large buildings have been erected or even contracted for, and there is no sign as yet that an improvement in trade may be expected in the near future. Business men are living in hope, but the builders are afraid that if an improvement is realised in commercial circles during the coming year it will be insufficient to be of any apreciable benefit to them. Plans for new buildings are sometimes deposited with the City Surveyor and passed by the Public Works Committee, although it is not intended immediately to carry them into execution. It is not surprising, therefore, to learn that many people whose plans have been sanctioned by the authorities last year are still waiting for better times before commencing practical operations. The greatest activity has been shown in the erection of dwelling-houses, for during the eleven months ended November 30 plans were passed for the building of 1,064 such houses. No small house property has been erected in the centre of the city, but the Housing Committee have continued their operations in various directions, with the result that they have effected considerable and important improvements in many of the courts and terraces. The Education Committee were moderate in their demands last year. Only one large Council school has been built, and that is in Leigh-road, Washwood Heath, but in addition a special school has been provided in Little Green-lane. Fewer public buildings have been erected than usual, and none which demand exceptional notice. Places of worship have received a fair amount of attention during the year. While reconstructions and additions have been made to certain business premises, few entirely new buildings have been erected. Building in the suburbs has been more extensive, comparatively speaking, than in the city, although in every district the complaint prevails that trade has been dull.

DUNDEE BUILDING TRADE IN 1908.

In point of valuation of property erected or started, work in Dundee during the past year has reached an average, but the expenditure has been more confined than usual, and as a consequence work for the various classes of tradesmen has not been plentiful. During the year plans representing a value of about 170,000*l.* have been passed by the Works Committee, which is only 4,000*l.* less than in 1907, but over 100,000*l.* of the total represents public or semi-public buildings, so that as far as general property is concerned the year must be classed as lean. The erection of house property, limited as it has been, has been confined mostly to Broughty Ferry-road (Craigie estate) and Blackness-road (Balgay and Blackness estates) districts, and includes tenements of a high-class and villas and cottages. There has been evidence of a desire on the part of certain classes of the community to occupy cottages, and a fair number of these ranging in cost up to about 500*l.* have been erected. At present there is a movement on foot to feu several acres of land in the northern district of the city for the purpose of erecting small cottages costing from 200*l.* to 300*l.* A considerable amount of work has been done in extending or reconstructing public works. During the year Stobswell School, erected at a cost of between 25,000*l.* and 30,000*l.*, and the two branch libraries—Blackness and Coldside—were opened. In the course of the twelve months employment for all the men in the building trades has not been full, and in the fall of the year particularly the number of tradesmen out of work was unusually large. It is satisfactory to state, however, that the relations between employers and employed have been very cordial, and that no dispute of any kind emerged during the year. As to the coming year the prospects are not too bright, there being no prospect of any extensive building operations being undertaken. Among those already fixed upon are the new Central Reading-room in Ward-road, and Dens-road School, and there is an off-chance of the Lord Provost carrying through his scheme for a new city hall.

BRADFORD BUILDING AND STONE TRADES.

In Bradford the building trade has been decidedly overclouded during the past four or five years (says the *Yorkshire Observer*), and though 1907 was thought at one time to have reached the low-water mark, the depression has been far greater during 1908, which, according to one local authority, is the worst which has been experienced for the past forty years. In the matter of public works and large building enterprises there has been very little activity. As to the future, there is the proposed extension of the Technical College, but although the scheme was sanctioned long ago the plans are not yet complete. Another considerable building scheme is that for erecting tenement flats on the Longlands area. The "digging" has already been taken out, and the contracts are now let for about 30,000*l.* These works, with a projected infants' school at Undercliffe, are all the undertakings in immediate prospect. Wages have remained at the same level, but if they had risen to twice the amount it would not have been much to the advantage of the workers, with so much unemployment prevailing. The speculative building trade has, indeed, been flat, stale, and unprofitable. Purchasers of property have been few in number, and the depression in the staple trade seems to have kept back the buying of new house property. One gratifying feature is that more property is let in every district in Bradford than was the case a year ago. There is a proposal early in the spring to start work on a garden suburb near the Allerton tramway terminus, with houses, each standing on a twelfth of an acre of land, to be let at rentals of 5*s.* 6*d.* a week and upwards. With regard to the local stone trade, Messrs. Moulson & Mellors, Ltd., report that the early part of the year was in a very depressed condition, but latterly there have been more inquiries, which have resulted in some orders. More orders have been placed from the Midlands, but the London trade has kept in a flat condition. Locally very little work has been done, although some contracts have been lately let and others are pending, which are taken as indicating a better prospect for the coming year.

ABERDEEN BUILDING TRADE.

The state of the building trade in Aberdeen last year was such that builders (according to the *Aberdeen Journal*) entertained the opinion that the low water mark had been reached, and that there would be no further backward flow of the tide of depression. For four years there had been a steady decline in the value of the buildings erected in the city; the annual value falling from 401,069*l.* in 1903 to 91,272*l.* last year. In the eight years 1896-1903 the value of the buildings erected in Aberdeen—according to the plans approved by the Plans Committee of the Town Council and the Burgh Surveyor—reached the enormous total of well over 3,000,000*l.*, and that in the last five years—1904-08—the total value has been only a little over 900,000*l.* The evil effects of the rushing up of buildings by speculators during the "boom" is at once apparent from these figures. A consoling factor in the year just closed has been the large amount of work that has been available in the country districts, where the building trade has been brisk. The statistics of 1908 on a detailed comparison with those of 1907 give even a worse result than is obtained by a comparison of the totals, for last year public buildings are responsible for over 22,000*l.* of the total value of 91,272*l.*, while the previous year the value under the same head was 3,400*l.* of a total of 145,495*l.* This, of course, means a bigger falling off in what may be described as commercial building. In 1907 the value of ninety-six dwelling-houses erected was 74,580*l.*, and last year the figure for sixty houses is 41,533*l.*, a decrease of 33,047*l.*; while under the heading of new business premises the total for twenty-three buildings was 44,950*l.*, compared with 2,900*l.* for nine, a decrease of 42,050*l.* There has been a considerable amount of employment provided by alterations on and additions to existing buildings, mostly business premises. Coming to the new business premises and workshops, the figures are the most discouraging that have been recorded for many years, and they indicate an almost complete stagnation of the building trade in this department. In the building of dwelling-houses there was even greater caution last year than the previous one, and this is not to be wondered at considering the large number of houses that stood tenantless last year. House proprietors and factors report an improvement this year, but there is still a vast amount of unlet property.

TRADE NEWS.

MOTOR FIRE-ENGINES IN LONDON.

The latest motor fire-fighter for London is the Merryweather patent "Hatfield" petrol motor fire-engine, two of which are in hand and are now nearing completion at the makers' works at Greenwich. Each of these machines, which will be the first of their kind in London, is capable of pumping 450 gallons per minute. The powerful motor enables a speed of 30 miles an hour to be attained on the level, and any hill in the London district can be readily negotiated. The "Hatfield" pump is of the reciprocating type, and has been specially designed so as to be run direct from the propelling motor, the operation of transferring the power from the road wheels to the pump being instantly performed by simply moving a single lever. It is of Messrs. Merryweather's latest design, with many patented improvements by which the perfection of deep suction lift is established without priming devices. The water will rise through the suction pipe from a depth of 27 ft. as soon as the pump is started. Considering the variety of conditions under which a fire-engine is used, the advantage of instant suction from a deep lift cannot be overestimated.

FIREPROOF FLOORING.

The floors of the United Kingdom Fireproofing Company have recently been made use of in the following buildings:—Telephone Exchange, Chester; Telephone Exchange, Bromley; Northern Insurance Buildings, Glasgow; St. James's Church, Barnet; Eccles Hall, Drayton Park; new Power-station, Grove-road; Constabulary Buildings, Northallerton; New Schools, South Bank; Clarence Hotel, Manchester; Ram Hotel, Doncaster; and Laundry Block, Salford Hospital.

Stained Glass & Decoration.

ST. JOHN'S CHURCH, NEWPORT.

At the Church of St. John the Baptist, Newport, a new oak pulpit has been erected from the designs of the Diocesan Architect, Mr. Frederick R. Kempson, of Cardiff. The execution of the design was in the hands of Messrs. Harry Hems & Sons, of Exeter.

SEFTON PARK CHURCH, LIVERPOOL.

Messrs. Percy Bacon & Brothers have just executed and erected a large three-light stained-glass memorial window in this church. The upper portion of the window contains "Our Lord Blessing Little Children," which is carried through the three lights, and under these are depicted three subjects—in the centre is the "Annointing of Our Lord's Head," with appropriate scenes in the house of Simon the leper, depicted in the two adjoining lower portions of the side lights. An inscription runs at the base of the window through the lights. The tracery openings contain angels and cherubs.

Sanitary and Engineering News.

SEWERAGE SCHEME, FERNHILL HEATH.

Mr. R. G. Hetherington, A.M.Inst.C.E., recently held an inquiry for the Local Government Board respecting an application of the Droitwich District Council for sanction to borrow the sum of 3,500*l.* for a sewerage scheme for Fernhill Heath (including works). Mr. T. P. Bayliss is engineer for the scheme.

PROPOSED REFUSE DESTRUCTOR, ILFORD.

At the Town Hall, Ilford, on the 22nd ult., Mr. A. G. Drury, M.Inst.C.E., held an inquiry respecting an application by the Ilford Urban District Council for sanction to borrow 15,000*l.* for the provision of a refuse destructor at their depôt in Ley-street, and 500*l.* for the provision of fire hydrants. Mr. Herbert Shaw, Surveyor, was among those who gave evidence.

PROPOSED SEWERAGE WORKS, SUTTON COLDFIELD.

At the Council House, Sutton Coldfield, recently, Mr. A. G. Drury held a Local Government Board inquiry into applications made by the Town Council for sanction to borrow three sums for sewerage works. The first application was in respect to a loan for 13,000*l.* for sewerage works, etc., at Streetly and Hill. Mr. W. A. H. Clarry, the Borough Surveyor, presented the plans, and explained that the area to be served would be 350 acres. Mr. J. D. Watson, Engineer to the Drainage Board, and Mr. Trench, chief assistant engineer to the London and North-Western Railway Company, also gave evidence. The second application was in respect of a loan of 900*l.* for an outfall sewer in connexion with the above, and the last was in respect of a loan of 100*l.* for surface water drain in Riland-road.

REDDITCH SEWAGE SCHEME.

Mr. A. G. Drury held an inquiry, on the 11th ult., at Redditch, on behalf of the Local Government Board, into an application by the Urban District Council to borrow 15,000*l.* for sewage disposal, including certain works in the parish of Ipsley. Mr. Dickinson, the engineer of the scheme, gave details of the proposed work, and Mr. H. P. Raikes (Messrs. Wilcox & Raikes) also gave evidence.

Miscellaneous.

ITALY'S INTERNAL WATERWAYS.

Of recent years a movement has taken place to promote inland navigation. Although owning perhaps the oldest canals for ship traffic, Italy is now far behind other countries in their development. She is therefore rightly attempting to make up for lost time. The work for the present is to be confined to the valleys of the Po, the Arno, and the Tiber. The length of the natural waterways in the Po system equals 1,488 kilometres, of which 786 kilometres belong to the river itself. The length of the artificial canals equals 939 kilometres, of which 171 kilometres belong to canals in Lombardy, 461 kilometres to canals in Venetia, and 307 kilometres to canals in Emilia. The length of the Arno system equals 253 kilometres, of which 106 kilometres are natural waterways. The third group in the valley of the Tiber has a length of 180 kilometres. The grand total of all waterways therefore equals 2,860 kilometres. The vessels used for inland traffic are primitive and insufficient in capacity. Those on the River Po barely reach 140 tons, while in all they average 40-50 tons per vessel. Very little data are recorded concerning inland navigation, but what does exist shows that hardly any use is made of canals for transporting the produce of the ground, as this cannot receive proper protection. Small as is the down-stream traffic, it is more than double the traffic up stream, whereas it is this latter which by distributing sea-borne goods inland should be the most profitable of the two. Some interesting data exist for 1906 on the canals in Lombardy. In that year 146,973 tons of goods were borne on the Nairglio Grande, 169,904 tons on the Nairglio di Parra, and 101,946 tons on the Martesana. The goods shipped to Milan alone and disembarked at Porta Ticinese Harbour amounted to 185,321 tons.

THE GEOLOGY OF HARROGATE.

Thirty-four years ago a memoir by Mr. C. Fox-Strangways, F.G.S., was published by the Geological Survey of England and Wales on "The Geology of the Country North and East of Harrogate." A book of the kind cannot be expected to enjoy a very wide measure of popularity, and it is not altogether surprising that the second edition should bear the date of the present year. While the main interest of the memoir is for geologists, the book contains more than one section appealing to other classes of the community, as, for instance, those

containing notes on building stones, the history and origin of the Harrogate springs, and particulars relative to borings and well sections in various towns and villages. The publication is illustrated by plates of geological sections and some excellent photographs of some remarkable natural features in the district.

KEATS'S HOMES IN HAMPSTEAD.

The name of Keats-grove is about to be given to John-street, which leads out of Downshire-hill into South Hill-road, near the east and lower heaths, Hampstead. William Dilke, of Chichester, the intimate friend of Keats, and his brother Charles Wentworth Dilke, the first baronet and founder of the *Athenæum*, built some houses in John-street, on the south side, which comprised Wentworth House, and an adjacent block of two semi-detached houses for the habitation of C. W. Dilke and Charles Armitage Brown, who called the two semi-detached houses "Wentworth-place." They were known by that name in the poet's time, when the western house was occupied by Mrs. Brawne and her daughter Fanny Brawne. Subsequent alterations affected the appearance of Wentworth-place—the two houses were converted into one as "Lawn Cottage," for which name "Lawn Bank" was afterwards substituted. A wing, for a studio, was added on to the east side of Lawn Cottage, and a portion of the garden at the rear was taken for a new road lying between John and Pond streets. The conversion of the two into one was done at the instance of King George IV. on behalf of Miss Chester, the actress. The garden to the south was bounded by a brick culvert which carried an affluent of the Fleet from Rosslyn-hill to the pond, now filled in, at the bottom of Pond-street. In 1816 Leigh Hunt was living in the Vale of Health, Hampstead, and to be near him Keats lodged in Well-walk. During the greater part of the three years which preceded his departure with Severn, in September, 1820, for Italy, Keats lived with the Browns in Wentworth-place—that is to say, in the eastern house of the two. He composed the "Ode to a Nightingale," it is said, in the garden; and in the interval we mention he wrote "Endymion," "Isabella," "The Eve of St. Agnes," and some of his sonnets and miscellaneous poems. Well-walk, too, has suffered much change since his day; the wooden bench on which he was wont to rest at the end, north side, of the grove in Well-walk—the bench on which Coleridge and Leigh Hunt last saw him—remained until 1885. His bust in the parish church was sculptured, 1894, by Miss Anne Whitney, of Boston, U.S.A., after the portrait by Joseph Severn.

LONDON COUNTY COUNCIL SCHOOL OF ARTS AND CRAFTS.

Arrangements have been made in the London County Council Central School of Arts and Crafts, Southampton-row, for a course of experimental instruction in Structural Mechanics, conducted by Mr. Percy J. Waldram, on Friday evenings, from 7 to 9.30, commencing Friday, January 8. Experiments will be performed by students upon suitable models and apparatus to determine the stresses and deflections in beams, columns, and roof principals, shoring, etc., and the stability of buttresses, retaining walls, arches, and domes. Lectures will be given upon practical design and calculations without the use of higher mathematics, and examples of construction will be worked out. It is proposed also to form groups to study the following subjects, if a reasonable number of students make application:—

A. Working drawings and applied geometry.
B. Foundations—shoring and underpinning.
C. Sanitation.
D. Specifications and estimating.
E. Modern construction and use of materials.

These classes will run one hour each one night a week; they will be taken by Mr. S. B. Caulfield, F.R.I.B.A.

LETCHWORTH GARDEN CITY.

The Chairman of First Garden City, Ltd., announces that if the necessary sum of 12,000*l.* can be raised in the form of 5*l.* shares the company will be enabled to undertake at once some greatly needed improvements at Letchworth, which will comprise the permanent sewage works and the construction of a wide bridge under the Great Northern Railway line and a carriage bridge over it. The population of the garden city has risen in four years to about 6,000 persons, and the railway line divides it into two parts, at present connected only by a footbridge and a narrow railway arch.

THE TURNER COLLECTION, NATIONAL GALLERY.

Under the direction and care of Sir Charles Holroyd and Mr. Hawes Turner, the Keeper, a set of forty-seven drawings and sketches, for the greater part in water-colours, with some in mixed media, or in oil, have been cleaned, mounted, and framed, and are now displayed upon screens in the Turner Room, XXII., of the National Gallery. The pictures, which appertain to Turner's bequest to the nation, have hitherto been hidden away, and in a measure forgotten, in the basement of the National Gallery. They are ascribed to the period 1798-1802, though a few of them belong to a later time. They comprise the two sketches "Scarborough"; interior views of Durham and Christ Church, Oxford, cathedrals; Norham, Scarborough, Caernarvon, and Dolbadarn castles; Newark and Fonthill abbeys; Derwentwater, Coniston Old Man (two), and Langdale Pikes; St. Bernard Pass; Studley Royal; the Old Mine Shaft and Donkeys; Windsor Park, with horses; and studies of riverside scenes in the Windsor district.

POTTERY TOWNS FEDERATION, STAFFS.

An agreement is arrived at in the matter of the proposed federation of the six pottery towns in Staffordshire, whereof some particulars were recently given in our columns. The representatives of all the towns concerned have arranged for proportionate scales of differential rating to prevail during twenty years in Hanley (100), Longton (85), Stoke (87), Burslem (96), Fenton (80), and Tunstall (88), and that the Council of the new united district shall carry on the gas and electrical undertakings, supplying consumers upon terms which shall not provide for profits, with provision for making good a deficiency out of the reserve fund (if any) or the district fund, and for repayment to such fund by the undertaking. The Bill was read the third time and passed in the House of Lords recently.

NEW RAILWAYS TO WATFORD.

In addition to the lines projected by the London and North-Western Railway Company for affording increased facilities of access to Watford from the north and south through the counties of Middlesex, Hertford, and Buckingham, a scheme has been formulated by the Edgware and Hampstead Company for a line from the Golder's-green terminus of the tube railway by way of Edgware, Elstree, Aldenham, and Bushey, traversing the Canons-park, All Souls College, Oxford, Lord Aldenham's, and Bushey-grove estates. The electrical line from Euston to Watford is in course of construction between Willesden and Sudbury, whence it will pass beneath the main line and so to Harrow.

ARBOR DAY, LEYTON.

Arbor Day at Leyton was celebrated recently by the planting of sixty trees in the Bushwood portion of the lower Epping Forest, near Wanstead Flats, and in the Leyton Playing-fields, by the school children of the district. The District Council have bought 1,250 trees to be planted in the roads and streets, and the Distress Committee have provided about 500 more for Wanstead Flats, and for the reinstatement of one of the avenues—originally planted 200 years ago by Sir Josiah Child—converging towards Wanstead House, which remained until 1822. Sir Josiah Child bought old Wanstead House from the Brooke family. His son, Sir Richard, first Lord Tilney, laid out the grounds, and employed Colin Campbell as architect of the mansion, which was designed upon a magnificent scale. The six columns of the portico were acquired in the sale, 1747, of the materials of Canons.

MIDDLESEX COUNTY COUNCIL.

At the meeting on December 17 an order was made under the Isolation Hospitals Acts, 1893 and 1901, directing that an isolation hospital for Feltham, Staines, and Sunbury Urban and Staines Rural Districts be established upon a site in the immediate neighbourhood of the Staines Union Workhouse. Edmonton Urban District Council asked for a contribution to the cost, estimated at 1,650*l.*, of a widening in Silver-street. It was decided to defray half the cost. Resolutions were passed authorising the Education Committee to arrange for plans to be prepared, and tenders obtained for the erection of a school in Blind-lane, Wembley, to accommodate 600 children, to enlarge Alperton School to provide additional accommodation for 400 children, and also to erect in Wealdstone a school to accommodate 600 children. The tender of Mr. W. J. Dickens, of Ealing, at 4,928*l.*, was accepted for the erection of a school in Providence-road, Yiewsley, and the tender of Messrs. H. Knight & Son, of Tottenham, at 1,444*l.*, was accepted for the conversion of the boys' and girls' departments of the Garfield-road school, New Southgate, into a mixed school.

COKE RESIDUES IN REINFORCED CONCRETE.

Mr. Annan Bryce inquires of the President of the Local Government Board in the Parliamentary papers what has been the result of his inquiries which he promised to make as to the forbidding throughout Germany of the use of coal residues in reinforced concrete for building purposes, and whether he proposes to take any steps with regard to the use of such material in England.—Mr. J. Burns states that he has made some inquiry on this subject, but his investigations are not at present concluded, and in the meantime he is not in a position to come to a conclusion with regard to the use in England of the material referred to.

PUBLIC LOANS AND MATERIALS.

In the Parliamentary papers last week, Mr. Flavin asks the President of the Local Government Board whether the Government advance loans to harbour or other public authorities for the building of piers or viaducts leading to piers for shipping accommodation in harbours; whether the Local Government Board have any official reports showing whether Jarrah wood or pitch-pine or ferro-concrete is the most serviceable and lasting in tidal or salt water, and the relative cost of Jarrah wood, pitch-pine, and ferro-concrete; and for what period would a loan be issued for work done in Jarrah wood or pitch-pine or in ferro-concrete.—Mr. Burns replies that money may be borrowed from the Public Works Loan Commissioners for these purposes, but it is only in very exceptional cases that such loans require the sanction of the Local Government Board. The term for which any loan would be sanctioned would depend on the nature and solidity of the work, and all the circumstances of the case. The Board have no official reports with regard to the durability of Jarrah wood, or pitch-pine, or ferro-concrete in salt water. This would largely depend upon the conditions under which the materials were used. He was advised that the relative cost of the materials respectively varies as 2:1:1½.

SCHOOL BUILDINGS IN GERMANY.

A report presented to the Board of Education on the subject of the crêche system in Germany and Switzerland contains the subjoined reference to "buildings."—In the matter of buildings, the average institution in this country (England), whether "babies' class" or day nursery, is probably as well housed as the average institution in Germany or Switzerland; in sanitary matters, indeed, our standard is higher. On the other hand, we seem to have nothing so good in the way of buildings as the best and newest of the German institutions. And in one point all foreign institutions are superior to ours—all of them possess some sort of garden or playground with a covered play-shed. These playgrounds are really pleasant places, always containing trees, frequently flowers, and small plots for children's gardens. Creepers grow upon the walls, and the sun often shines into the kindergarten through a green frame of vine leaves. Few of our private institutions have gardens at all, and our school playgrounds are generally lacking in any of the qualities of a garden; and though it would be impossible for children in this country to be so much out of doors as on the Continent, still we might be more prepared than we often are to take advantage of fine weather when we have it. At any rate, the provision of a garden should be aimed at whenever possible in the planning of a day nursery, and education authorities might consider the question of a separate playground for the smallest children, which would always be at their disposal.

Capital and Labour.

STATE OF LABOUR IN THE BUILDING TRADE.

According to the *Labour Gazette* employment in November continued slack. It was rather worse than a month ago, and much worse than a year ago. Carpenters and plumbers, however, showed a slight decrease in the percentage of trade union members unemployed as compared with October. Returns received from 697 firms employing 40,800 workpeople at the end of November show that there was a decrease in the number employed in every district compared with a month ago, and a considerable decrease in almost every district compared with a year ago, the total decrease in the number of skilled tradesmen employed being 3·7 per cent. compared with a month ago, and 6·8 per cent. compared with a year ago; while in the case of labourers the decrease amounted to 3·5 per cent. compared with October, 1908, and to 9·3 per cent. compared with November, 1907. The percentage of trade union carpenters and joiners unemployed at the end of November was 11·6, as compared with 12·5 a month ago, and 8·2 a year ago; and for plumbers, at the same dates, the percentages were 12·0, 12·8, and 8·9 respectively.

List of Competitions, Contracts, etc.

For some Contracts still open, but not included in this List, see previous issues. Those with an asterisk (*) are advertised in this Number: Competitions, —; Contracts, iv. vi. viii. x.; Public Appointments, —.; Auction Sales, xliv.

Certain conditions, beyond those given in the following information, are imposed in some cases, such as: the advertisers do not bind themselves to accept the lowest or any tender; that a fair wages clause shall be observed; that no allowance will be made for tenders; and that deposits are returned on receipt of a bonâ-fide tender unless stated to the contrary.

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in.

*** It must be understood that the following paragraphs are printed as news, and not as advertisements; and that while every endeavour is made to ensure accuracy, we cannot be responsible for errors that *may* occur.

Contracts.

BUILDING.

JANUARY 4. — **Burghead.** — COTTAGE.—Mason, carpenter, plumber, slater, plaster, and painter works of a cottage to be erected at Granary-street, Burghead. The plans, etc., may be seen with Mr. John Wittet, architect, Elgin.

JANUARY 5. — **Evenwood.** — ALTERATIONS.—Alterations to cellar at the Workmen's Club and Institute, Evenwood. Plans, etc., can be seen, and quantities obtained, on application to Mr. C. Johnston, architect and surveyor, Victoria-street-chambers, Bishop Auckland.

JANUARY 5. — **Tranmere, Birkenhead.** — IRON BUILDING.—The Guardians invite tenders for supply and erection of a corrugated-iron portable building at the Union Workhouse, Church-road, Tranmere. Specification and form of tender at the office of the Master of the Workhouse.

JANUARY 6.—**Edinburgh.**—WALLS, ETC.—Edinburgh Corporation Roads Department invite tenders (1) for new retaining walls and removal of old ditto at each side of widening operations now in progress at Willowbrae-road; (2) for new larchwood fencing and field gates at the said widening. Schedules, etc., may be obtained on application to the City Road Surveyor, City Chambers.

JANUARY 6.—**Llanddaniel.**—COTTAGES.—Erection of four cottages at Llanddaniel, near Gaerwen, for Mr. Owen Griffith, Henfuarth, Llanddaniel. Plans, etc., to be seen at Henfuarth, or at the office of Messrs. Richard Davies & Son, architects, Bangor.

JANUARY 6.—**New Sarum.**—WORKSHOP, ETC.—The U.D.C. invite tenders for the erection of a workshop, stores, etc., in Friary-lane. Plans, etc., can be seen, and bills of quantities, etc., obtained, on application to Mr. W. J. Goodwin, A.M.Inst.C.E., City Engineer and Surveyor, Municipal Offices, Salisbury.

JANUARY 6. — **Rathdown.**—COTTAGES.—Rathdown No. 1 R.D.C. invite tenders for building one pair labourers' cottages. Plans, etc., can be obtained from the Clerk to the R.D.C. on payment of 5s. Mr. Patrick Cunniam, Clerk of Council, Loughlinstown.

JANUARY 6.—**Southampton.**—SCHOOL ALTERATIONS.—The Corporation invite tenders for executing certain alteration and additions at the Western District Council School. Plans, etc., may be inspected, and bills of quantities, etc., obtained, at the Borough Engineer's office, upon production of the Borough Treasurer's receipt for a deposit of 2*l.* 2s.

JANUARY 6.—**Wetheral.**—CLOAK-ROOM.—Erection of cloak-room to the Reading-room, Wetheral. Mr. J. H. Martindale, F.R.I.B.A., architect, Eaglesfield Abbey Rooms, Castle-street, Carlisle.

JANUARY 7. — **Bridlington.** — SCHOOLS.—The Bridlington Borough Education Committee invite tenders for the erection and completion of the Burlington Schools and caretaker's residence. Drawings, etc., may be inspected, and bills of quantities, etc., may be obtained at the office of Mr. J. Earnshaw, M.S.A., Architect and Surveyor, Carlton House, Bridlington, upon payment of a deposit of 2*l.* 2s.

JANUARY 7.—**Cork.**—COTTAGES.—The R.D.C. invite tenders for building 192 labourers' cottages, and fencing same number of cottage plots, at a cost not exceeding 140*l.* per cottage. Plans, etc., can be obtained from the Clerk to the R.D.C. on payment of 5s. Mr. John Cotter, Clerk of Council, Boardroom, Workhouse, Cork.

JANUARY 7. — **Windsor.**—REPAIRING CHAPELS.—The T.C. of the Borough of New Windsor invite tenders for repairing the two mortuary chapels, in the Windsor Cemetery. The specification may be seen, and forms of tender obtained, upon application at the office of Mr E. A. Stickland, Borough Surveyor, Alma-road, Windsor.

JANUARY 9. — **Bandon (Ireland).** — COTTAGES.—Bandon R.D.C. invite tenders for the erection of 143 single cottages, with fencing. Conditions of contract and any other particulars required from Mr. A. Haynes, Clerk of District Council, Council Office, Workhouse.

* JANUARY 13.—**Rotherhithe.**—FACTORY ADDITIONS.—The Desiccated Grain Company invite tenders for additions to their factory. See advertisement in this issue for further particulars.

JANUARY 14.—**Chester.**—ELECTRICITY WORKS.—Tenders are invited for building a battery room and other extensions at the electricity works in New Cane-street. Plans and specifications can be seen at the office of the City Surveyor, Town Hall, Chester, and bills of quantities obtained on deposit of 1*l.*

JANUARY 14.—**Sneaton.**—CHURCH WORKS.—Alterations in chancel, for reseating, and other works at the Parish Church of Sneaton, near Whitby. The plans, etc., may be seen at the office of Mr. Edward H. Smales, A.R.I.B.A., architect, 5, Flowergate, Whitby.

JANUARY 16. — **Ilford.** — HOUSE.—Ilford Education Committee invite tenders for the erection of a caretaker's house at South Park School, Water-lane, Ilford. Plans, etc., may be seen, and forms of tender obtained, at the office of the architect, Mr. C. J. Dawson, F.R.I.B.A., 11, Cranbrook-road, Ilford. 2*l.* 2s. deposit required.

JANUARY 16-21.—**London.**—RECEIVING WARD ACCOMMODATION.—The Guardians of the Poor of the Parish of St. Mary, Islington, invite tenders for the provision of improved receiving ward accommodation at the St. John's-road Workhouse, Upper Holloway, N., in accordance with plans, etc., which may be seen up to January 16 on application to their architect, Mr. William Lockwood, of 12, Sherwood-street, Piccadilly-circus, London, W. A copy of the bills of quantities can also be obtained of him upon depositing 5*l.* 5s.

JANUARY 18.—**Hunslet.**—OFFICES.—Hunslet R.D.C. invite tenders for the bricklayer's, joiner's, plumber's, plasterer's, slater's, and painter's work required in the erection of the Council's new offices in Leek-street, Hunslet. Application for specifications and quantities, accompanied by a deposit of 10s. 6d., must be made to Mr. B. Wood Higgins, architect, Oulton, near Leeds.

* JANUARY 18. — **Kingston-on-Thames.** — ADDITIONS.—The Guardians of the Kingston Union invite tenders for making a small addition to the Union Offices, Coombe-lane, Kingston-on-Thames. See advertisement in this issue for further particulars.

* JANUARY 19.—**London.**—BRANCH POST-OFFICE, ETC.—The Commissioners of H.M. Works, etc., invite tenders for a branch post-office and meteorological office, South Kensington (second contract—superstructure). See advertisement in this issue for further particulars.

JANUARY 19.—**Seaham Harbour, etc.**—SCHOOLS.—The C.C. of Durham invite tenders for the erection of temporary Council school at Seaham Harbour. Alterations and improvements at Middlestone Moor, South Frosterley, Easington-lane, and Hedley Hill Council schools. Plans, etc., may be seen, and bills of quantities obtained (for Middlestone Moor and Seaham Harbour Council schools only), at the office of Mr. F. E. Coates, A.R.I.B.A., Shire Hall, Durham.

* JANUARY 21. — **Holloway.** — RECEIVING WARD.—The Islington Guardians invite tenders for providing improved receiving ward accommodation at St. John's-road Workhouse. See advertisement in this issue for further particulars.

NO DATE.—**Kendal.**—LODGE.—Building "The Parkside Lodge," on a plot of land on the Parkside-road, Kendal, for the Committee of the Westmorland Consumption Sanatorium. Plans can now be inspected, and bills of quantities obtained, on early application at office of Mr. John Hutton, M.R.S.I., architect, Kendal.

NO DATE.—**Starnthwaite.**—DORMITORIES.—Tenders for the various artificers' works are required in building new dormitories and other improvements to the Training Home for Epileptic Children, at Starnthwaite. Plans, etc., may be inspected, and bills of quantities obtained, on application at office of Mr. John Stalker, M.S.A., architect, 57, Highgate, Kendal.

ENGINEERING, IRON, AND STEEL.

JANUARY 4. — **Beckenham.**—ELECTRICITY METERS.—The U.D.C. invite tenders for the supply of electricity meters. Specifications, etc., may be obtained on payment to the Council's Collector at the Council Offices, Bromley-road, of the sum of 2*l.* 2s. For any further information apply to the Resident Engineer, Mr. J. E. Tapper, Electricity Works, Church Fields-road, Beckenham.

JANUARY 7. — **Bridlington.** — HEATING.—The Bridlington Borough Education Committee invite tenders for heating the Burlington Schools with hot water (low pressure). Drawings, etc., may be inspected at the office of Mr. J. Earnshaw, Architect and Surveyor, Carlton House, Bridlington.

JANUARY 7.—**London.**—BRIDGEWORK.—The Mexican Railway Company, Ltd., invites tenders for the supply and delivery of 290 tons bridgework. Specifications (including drawings), etc., can be obtained at the Company's offices, on payment of 10s. each, between the hours of ten a.m. and three p.m., Saturdays excepted. Mr. B. E. Holloway, Assistant Secretary, the Mexican Railway Company, Ltd., 6, Broad-street-place, E.C.

JANUARY 9.—**Blean.**—ENGINE.—The Guardians require an eight nominal horse-power, horizontal, non-condensing steam engine, etc. Also one "Royle" feed-water heater. Any further information required may be obtained of the Master of the Workhouse.

JANUARY 11. — **Edinburgh.**—WEIGHING MACHINE.—Estimates are wanted for providing and erecting (1) 5-ton lorry weigh bridge for City Hospital, and (2) 7-ton cattle weighing machine, etc., for New Markets, Gorgie, according to plans, etc., which may be seen at the Public Works Office, City Chambers, where copies of the specifications and forms of tender may be obtained.

* JANUARY 16. — **Southgate.**—IRON FENCING.—The Southgate U.D.C. invite tenders for 260 yds. of unclimbable iron fencing. See advertisement in this issue for further particulars.

JANUARY 19. — **Hammersmith.**—ALTERING LIFTS.—Schemes and tenders for altering lifts and fans at present worked by continuous current lifts and two fans to work from single-phase alternating current and two fans to work from steam engine. Mr. J. Lamb, Clerk to the Guardians, 206, Goldhawk-road, Shepherd's Bush.

JANUARY 26. — **Belfast.** — FISH-PLATES.—Midland Railway (Northern Counties Committee, Ireland) invite tenders for fish-plates, etc., for the supply and delivery in the permanent way yard, Duncrue-street, Belfast. Copies of the drawings (A and B) and forms of tender can be obtained from Mr. James Cowie, Secretary of Committee, York-road Terminus, Belfast.

MISCELLANEOUS.

JANUARY 4.—**Dover.**—RIVER DISTRICT SCAVENGING.—The T.C. invite tenders for the collection and disposal of the house refuse at River, Dover. Forms of tender, etc., may be obtained at the office of the Borough Engineer (Mr. W. C. Hawke, A.M.Inst.C.E.), Maison Dieu House, Biggin-street, Dover.

JANUARY 6.—**Manchester.**—SCHOOL FURNITURE.—Manchester Education Committee invite tenders for the supply of school furniture at the Cavendish Municipal School, Chorlton-on-Medlock. Specifications may be obtained, and samples of desks may be seen, at the offices in Deansgate, Manchester, on a deposit of 1*l.* 1s.

JANUARY 6. — **Ormskirk.** — SCAVENGING. — West Lancashire R.D.C. invite tenders for the emptying of ashpits, etc., in banks, in the Township of North Meols, in accordance with terms and conditions, which may be obtained on application to Mr. James Peach, Sanitary Inspector, Knowsley-road, Ormskirk.

JANUARY 7.—**Manchester.**—IRON RAILINGS.—Manchester Corporation Parks and Cemeteries Committee invite tenders for the erection of iron railings and fencing at Hulme Hall-lane, Ten Acres-lane, and Manley Park Recreation Grounds. Drawings may be seen, and specification, etc., obtained, on application at the City Surveyor's Office, Town Hall, Manchester, on payment of 2*l.* 2s. All cheques or postal orders are to be made payable to the order of "The Corporation of Manchester."

JANUARY 7. — **Slough.** — PUBLIC LIGHTING.—Slough U.D.C. invite tenders for lighting, etc., of the public lamps within their District. Specification prepared by the Surveyor to the Council, copies of which may be obtained at his office, 1, Mackenzie-street, Slough.

JANUARY 9. — **Bandon.**—FENCING.—Bandon R.D.C. (Ireland) invite tenders for fencing nine additional half-acre allotments to existing cottages. Conditions of contract and any other particulars required can be had on application from Mr. A. Haynes, Clerk of District Council, Council Office, Workhouse.

JANUARY 11. — **Hambledon.** — SCAVENGING. — The R.D.C. of Hambledon invite tenders for the collection and removal of dust, ashes, house refuse, and the contents of earth closets, and for the cleansing of the cesspools in the whole of the Parish of Shalford. Forms of tender and all particulars can be obtained on application at office of Mr. Ferdinand Smallpeice, Clerk to the Council, 138, High-street, Guildford, or of Mr. E. G. Randall, the Clerk of the Parish Council of Shalford.

* JANUARY 11. — **London, N.W.** — The Pension Dwellings Company invite tenders for a quantity of joinery for large block of dwellings at St. Pancras. See advertisement in this issue for further particulars.

JANUARY 11.—**Shalford.**—SCAVENGING.—The R.D.C. of Hambledon invite tenders for the collection and removal of dust ashes, house refuse, and the contents of earth closets, and for the cleansing of the cesspools, in the whole of the Parish of Shalford. Forms of tender, etc., can be obtained on application at office of Mr. Ferdinand Smallpiece, Clerk to the Council, 138, High-street, Guildford, or of Mr. E. G. Randall, the Clerk of the P.C. of Shalford.

JANUARY 16.—**Bilston.**—SCHOOL FURNITURE.—Bilston Education Committee invite tenders for the furnishing of the boys', girls', and infant departments of the Bull Holes Council School. Form of tender, etc., may be obtained from the Education Offices, Town Hall, Bilston.

JANUARY 16. — **Newcastle-upon-Tyne.** — WOOD PAVING BLOCKS.—Tenders are invited for the supply and delivery at the Newcastle Quay of 500,000 wood blocks. Prices for any suitable timber in blocks, either solid or prismatic, will be considered on payment of 1*l.* 1s. to the City Treasurer, Town Hall, Newcastle. Forms of tender and all other particulars can be obtained at the City Engineer's Office, Town Hall, Newcastle.

NO DATE.—**Swansea.**—STOVES, BATHS, ETC.—Supply of combination stoves, baths, and washing coppers for Baptist Well Housing Scheme, for the Corporation of Swansea. Mr. Marcus Hoskins, F.S.I., Borough Estate Agent, Coleridge House, Swansea.

NO DATE.—**Taplow.**—CUBICLES.—Tenders are invited for fitting cubicles for dormitories. Apply personally, Principal, Grammar School, Taplow.

PAINTING, etc.

JANUARY 6.—**Oldham.**—PAINTING.—Oldham Markets and Baths Committee invite tenders for painting work at Lowermoor, Robin Hill, and Central Baths. Specifications, etc., can be obtained at the Borough Surveyor's office.

JANUARY 6.—**Southampton.**—PAINTING.—The Corporation invite tenders for painting the gates and railings at the Cemetery, Hollybrook. Specification, etc., may be obtained at the Borough Engineer's office.

ROADS, SANITARY, AND WATER WORKS.

JANUARY 4.—**Framlingham.**—DRAIN.—Plomesgate R.D.C. invite tenders for laying about 200 yds. of 6-in. pipe drain, in Framlingham. Plan, etc., may be seen at the house of Mr. Francis Read, Forestreet, Framlingham.

JANUARY 6.—**Chepping Wycombe.**—AMERSHAM-ROAD SEWERAGE, ETC.—The Corporation invite tenders for the sewerage, widening, etc., of Amersham-road, from Shrubbery-road to the Borough boundary. Plans, etc., may be seen, and quantities and forms of tender obtained, at the office of Mr. T. J. Rushbrooke, Borough Surveyor, Easton-street, High Wycombe.

JANUARY 6. — **Chepping Wycombe.** — PRIVATE STREET IMPROVEMENT WORKS.—The Corporation invite tenders for the making-up of Desborough Park-road. Plans, etc., may be seen, and quantities and forms of tender obtained, at the office of Mr. T. J. Rushbrooke, Borough Surveyor, Easton-street, High Wycombe.

JANUARY 7. — **Cork.** — SEWER WORKS, ETC.—Cork R.D.C. invite tenders for the execution of works, according to plans and specifications, which may be inspected at the Board-room, Cork Workhouse, viz.: (*a*) Laying sewer, building manhole, etc., at Glanmire Village; (*b*) cleaning out and deepening existing well, and erecting pump at Barnagore, Ovens; (*c*) repairing well, supplying and erecting new pump at Coolmore, near Ringaskiddy. Forms of tender may be obtained on application at the Board-room, Cork Workhouse.

JANUARY 7.—**Pinner.**—ROADWORKS.—The R.D.C. of Hendon invite tenders for kerbing, channelling, paving, making-up, etc., roads in the Parish of Pinner. The conditions of contract and plans, etc., may be seen at the office of Mr. J. A. Webb, Engineer and Surveyor to the Council, Stanmore, where schedule of quantities and forms of tender can be obtained on deposit of 5*l*.

JANUARY 7.—**Southend-on-Sea.**—MAKING-UP.—The Corporation invite tenders for the making-up of Albion-road. Plans, etc., may be seen, and bill of quantities, etc., obtained (on deposit of cheque for 1*l*. 1s.), upon application to Mr. Ernest J. Elford, M.Inst.M.E., Borough Engineer and Surveyor.

JANUARY 8.—**Manchester.**—ROAD WORKS.—Manchester Corporation (Withington Committee) invite tenders for the several works required in the draining, kerbing, flagging, and paving, with East Lancashire setts, of:—Kippax-street, Withington; Oswald-road, Chorlton-cum-Hardy; Scott-avenue, Chorlton-cum-Hardy; Titterington-avenue, Chorlton-cum-Hardy. Plans, etc., can be seen, and a form of tender, with quantities and any further information, obtained, from the Surveyor to the Committee, Town Hall, West Didsbury.

JANUARY 9.—**Llangynwyd.**—WATER SUPPLY WORKS.—Penybont R.D.C. (Bridgend) invite tenders for the construction of works of water supply in the Parish of Llangynwyd Middle. Plans can be seen, and specification, etc., can be obtained, from Mr. Watkin J. Davies, Surveyor, Felin Fach, Tondu, upon payment of 1*l*. 1s.

JANUARY 12.—**Barnsley.**—NEW SEWAGE WORKS.—The Barnsley T.C. invite tenders for the excavating, laying, and jointing of about 1,600 lin. yds. of 20 in. diameter cast-iron socketted pipes and special castings, and for the driving of headings and the construction of a tunnel and screening chambers, sewage well, brick sewers, etc. The drawings can be seen, and the specification, etc., may be obtained, on application to Mr. J. Henry Taylor, M.Inst.C.E., Borough Surveyor, Engineer for the Works, Manor House Offices, Barnsley, on payment of 3*l*. 3s. to Mr. John F. Burn, Borough Accountant, Manor House Offices, Barnsley.

JANUARY 14.—**Monaghan District Asylum.**—WATER MAIN.—The Joint Committee of above Asylum invite tenders for the laying and fixing, etc., of 3-in. water main to new building, according to plan, etc., prepared by Mr. J. H. M. Wilson, C.E., which may be seen in the Board-room of the Asylum.

JANUARY 15.—**Belfast.**—GLENGORMLEY AND WHITEHOUSE SEWERAGE AND SEWAGE-DISPOSAL SCHEME.—Belfast R.D.C. invite proposals for carrying out a scheme of sewerage and sewage-disposal works. Plans, etc., can be seen at office of Mr. Joseph W. Robb, Clerk to the R.D.C., Council Office, Union Workhouse, Belfast. Bills of quantities, etc., can be purchased at a cost of 1*l*. 1s. per copy.

JANUARY 18.—**Loch Arklet.**—WATERWORKS.—Glasgow Corporation (Water Department) invite tenders for the construction of the works in the counties of Stirling and Perth, authorised by the above order for raising the level of Loch Arklet and conveying water therefrom to Loch Katrine. Copies of the specification, etc., together with prints of the drawings, may be obtained from Mr. J. R. Sutherland, the Engineer to the Water Department, at his office, 45, John-street, Glasgow, upon payment to the Water Treasurer, 45, John-street, Glasgow, of 10*l*. 10s. The resident engineer will meet intending contractors on the site of the works at 1 p.m. on January 5, and 10 a.m. on January 6 and 7.

JANUARY 18. — **Thurnscoe.** — SEWAGE DISPOSAL WORKS.—Thurnscoe U.D.C. invite tenders for the various works required in carrying out certain alterations and improvements at the Thurnscoe Sewage Disposal Works. Plans, etc., may be seen, and quantities obtained, from the Engineer, Mr. Henry Smith, of Compton-buildings, Bow-street, Keighley.

JANUARY 19.—**South Darley.**—WATERWORKS.—The U.D.C. invite tenders for waterworks. Plans may be seen at Market Hall-chambers, Matlock. Specification, etc., can be obtained on application to the engineers, Messrs. Taylor, Wallin, & Taylor, of Cathedral-buildings, Newcastle-upon-Tyne, on payment of 3*l*. 3s. deposit. Contractors wishing to be shown over the line of works are requested to meet the engineers at Darley Dale Station on January 5 at eleven o'clock.

JANUARY 21. — **Cuckfield.**—SEWERAGE AND SEWAGE DISPOSAL WORKS.—The R.D.C. of Cuckfield invite tenders for the construction of about 3,600 lin. yds. (including about 800 lin. yds. in heading) of 9-in. and 5,650 lin. yds. of 8-in. diameter stoneware pipe sewers; about 290 lin. yds. of 9-in., 50 lin. yds. of 8-in., 75 lin. yds. of 6-in., and 225 lin. yds. of 4-in. diameter cast-iron pipe sewers, etc., in the Parishes of Balcombe and Cuckfield Rural. Plans, etc., may be seen, and specifications, etc., may be obtained, on application to Messrs. Strachan & Weeks, civil engineers, 9, Victoria-street, Westminster, London, on payment of a deposit of 3*l*. 3s. by cheque.

NO DATE. — **Caddonfoot.** — DRAINS.—Estimates wanted to cut, lay, and fill in between 1,000 and 1,500 chains of drains upon the Farm of Torwoodlee Mains, in the Parish of Caddonfoot. Mr. Thomas Morton, Torwoodlee Mains, Galashiels, will arrange to point out the ground to be drained. Estimates will be received by Messrs. Curle & Erskine, W.S., Melrose.

✱ NO DATE.—**London, E.C.**—UNDERGROUND CONVENIENCE.—The Corporation of London invite tenders for alterations and additions to existing underground convenience at the Royal Exchange, and construction of new underground convenience in Eastcheap. See advertisement in this issue for further particulars.

STONES, MATERIAL, AND STORES.

JANUARY 4. — **East Preston.** — FLINTS. — East Preston R.D.C. invite tenders for the supply of clean, hard dug flints. Mr. Arthur Shelley, Clerk, Littlehampton.

JANUARY 4.—**Erith.**—CLINKER.—Erith U.D.C. invite tenders for the supply of 1,000 tons of destructor clinker. Mr. Charles H. Fry, Clerk to the Council, Council Offices, Erith, Kent.

JANUARY 4.—**Grimsby.**—MATERIALS.—The Corporation invite tenders for the supply of materials. Specifications, etc., may be obtained at office of Mr. H. Gilbert Whyatt, A.M.Inst.C.E., Borough Engineer and Surveyor, Town Hall, Grimsby.

JANUARY 5.—**Dundee.**—WHINSTONE SETTS.—Dundee T.C. invite tenders for 1,350 tons of new whinstone setts. Specifications, etc., may be obtained at the office of Mr. Jas. Thomson, City Engineer, Municipal Offices, Dundee.

JANUARY 5.—**Oystermouth.**—IRON PIPES.—Oystermouth (near Swansea) U.D.C. invite tenders for the supply and delivery of about 900 lin. yds. of 18-in. cast-iron spigot and socket outfall sewer pipes and specials. Drawings may be seen, and copies of the specification, etc., obtained, either at the office of Mr. J. T. Eayrs, M.Inst.C.E., Clarence-chambers, 39, Corporation-street, Birmingham, or at the Council Offices (Surveyor's Department), Oystermouth, near Swansea, on deposit of 1*l*. 1s.

JANUARY 11. — **East Stonehouse.** — MATERIALS.—East Stonehouse U.D.C. invite tenders for the supply and delivery of various materials. Forms of tender and specifications may be obtained on application to Mr. C. H. Trounce, Surveyor, Town Hall, East Stonehouse, Devon.

JANUARY 11.—**Glanford Brigg.**—GRANITE AND SLAG.—The R.D.C. of Glanford Brigg invite tenders for the supply of granite and slag. Specifications and forms of tender may be had on application to Mr. Frank C. Hett, Clerk, 11, Bigby-street, Brigg.

JANUARY 11. — **St. Pancras.** — CONTRACTS.—The Highways, Sewers, and Public Works Committee of the Council of the Borough of St. Pancras invite tenders for work or materials for one year. Forms can be obtained on application to Mr. Wm. Nisbet Blair, M.Inst.C.E., Borough Engineer and Surveyor.

JANUARY 12.—**Perry Barr.**—BLAST CINDER.—The U.D.C. of Perry Barr, in the County of Stafford, invite tenders for the supply and delivery of (*a*) Rowley rag and (*b*) blast furnace cinder. Specification, etc., may be obtained on application to Mr. Ernest Bailey, Surveyor to the Council, at the Council House, Green-lane, Hamstead, near Birmingham.

✱ JANUARY 14.—**Hampstead.**—MATERIALS, ETC.—The Hampstead B.C. invite tenders for supply of certain materials and works. See advertisement in this issue for further particulars.

JANUARY 19.—**Chislehurst.**—ANNUAL CONTRACTS.—Chislehurst U.D.C. invite tenders for the supply of materials, etc., for one year. Particulars, etc., may be obtained on application being made at the Council Offices.

JANUARY 20.—**Bexley.**—PIPES.—Bexley U.D.C. invite tenders for the supply and delivery of best glazed stoneware socketted pipes. Specification, etc., can be obtained upon application to Mr. W. T. Howse, Surveyor to the Council.

JANUARY 20. — **Bexley.** — ROAD MATERIAL. — The Bexley U.D.C. invite tenders for the supply of broken stone. Specification and form of tender can be obtained upon application to Mr. W. T. Howse, Surveyor to the Council.

JANUARY 20.—**Bexley.**—STORES.—Bexley U.D.C. invite tenders for the supply and delivery of best Portland cement, manhole covers and frames, and gulley grates and frames. Specification and form of tender may be obtained upon application to Mr. W. T. Howse, Surveyor to the Council.

✱ JANUARY 21.—**West Ham.**—MATERIALS, STORES, ETC.—The West Ham B.C. invite tenders for supply of various materials, stores, etc. See advertisement in this issue for further particulars.

✱ JANUARY 25.—**Poplar.**—WORKS AND MATERIALS.—The Poplar B.C. invite tenders for removal of road sweeping and also supply of various stores and materials. See advertisement in this issue for further particulars.

✱ JANUARY 27.—**Chelsea.**—WORKS AND MATERIALS.—The Chelsea B.C. invite tenders for supply and execution of various articles and works from April 1, 1909, to March 31, 1910. See advertisement in this issue for further particulars.

Auction Sale.

Nature and Place of Sale.	By whom Offered.	Date of Sale
*FREEHOLD PROPERTIES, CANNING TOWN, VICTORIA DOCK-ROAD, ETC.—At the Mart	Edwin Fox & Bousfield	Jan. 13

PRICES CURRENT OF MATERIALS.

**** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

BRICKS, &c.

	£	s.	d.	
Best Stocks	1	6	0	per 1000 alongside, in river.
Picked Stocks for Facings	2	10	0	,, delivered
Flettons..... ...	1	4	0	,, at railway depôt.
Best Fareham Red	3	12	0	,, ,, ,,
Best Red Pressed Ruabon Facing..	5	0	0	,, ,, ,,
Best Blue Pressed Staffordshire ...	3	15	0	,, ,, ,,
Do. Bullnose	4	0	0	,, ,, ,,
Best Stourbridge Fire Bricks	3	14	0	,, ,, ,,
GLAZED BRICKS.				
Best White and Ivory Glazed Stretchers.....	10	7	6	,, ,, ,,

BRICKS, &c. (*continued*).

	£	s.	d.	
Headers	9	17	6	per 1000 at railway depôt.
Quoins, Bullnose, and Flats	13	17	6	,, ,, ,,
Double Stretchers	15	17	6	,, ,, ,,
Double Headers...	12	17	6	,, ,, ,,
One Side and two Ends	16	17	6	,, ,, ,,
Two Sides and one End.....	17	17	6	,, ,, ,,
Splays, Chamferred, Squints..	15	10	0	,, ,, ,,
Best Dipped Salt Glazed Stretchers	10	7	6	,, ,, ,,
Headers.....	9	17	6	,, ,, ,,
Quoins, Bullnose, and Flats	13	17	6	,, ,, ,,
Double Stretchers	15	17	6	,, ,, ,,
Double Headers...	12	17	6	,, ,, ,,
One Side and two Ends	16	17	6	,, ,, ,,
Two Sides and one End.....	17	17	6	,, ,, ,,
Splays, Chamferred, Squints..	15	10	0	,, ,, ,,

BRICKS, &c. (*continued*).

	£	s.	d.	
Second Quality White and Dipped Salt Glazed	1	5	0	per 1000 less than best.
		s.	d.	
Thames and Pit Sand		6	6	per yard, delivered.
Thames Ballast		5	0	,, ,,
Best Portland Cement.....	28	0		per ton, ,,
Best Ground Blue Lias Lime	19	0		,, ,,

NOTE.—The cement or lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime ..... 11s. 6d. per yard, delivered
Stourbridge Fireclay in sacks 27s. 0d. per ton at rly. dpt.

STONE.

	s.	d.	
BATH STONE—delivered on road waggons, Paddington Depôt.....	1	6½	per ft. cube.
Do. do. delivered on road waggons, Nine Elms Depôt.....	1	8½	,, ,,
PORTLAND STONE (20 ft average)—			
Brown Whitbed, delivered on road waggons, Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf	2	1	,, ,,
White Basebed, delivered on road waggons, Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf	2	2½	,, ,,

STONE (*continued*).

	s.	d.	
Ancester in blocks	1	10	per ft. cube. deld. rly. depôt.
Beer "	1	6	" "
Greenshill "	1	10	" "
Darley Dale in blocks	2	4	" "
Red Corsehill "	2	2	" "
Closeburn Ree Freestone	2	0	" "
Red Mansfield "	2	4	" "

YORK STONE *Robin Hood Quality.*

	s.	d.	
Scappled random blocks	2	10	" "
6 in. sawn two sides landings to sizes (under 40 ft. super.)	2	3	per ft. super "
6 in. rubbed two sides ditto, ditto	2	6	" "
3 in. sawn two sides slabs (random sizes)	0	11½	per ft. cube. "
2 in to 2½ in. sawn one side slabs (random sizes)	0	7½	" "
1½ in. to 2 in. ditto, ditto	0	6	" "
HARD YORK—			
Scappled random blocks	3	0	" "
6 in. sawn two sides landings to sizes (under 40 ft. super.)	2	8	per ft. super. "
6 in. rubbed two sides ditto	3	0	" "
3 in. sawn two sides slabs (random sizes)	1	2	" "
2 in. self-faced random flags	0	5	" "

SLATES.

	£	s.	d.	
In. In.				
20×10 best blue Bangor	13	2	6	per 1000 of 1200 at r.d.
20×12 " "	13	17	6	" "
20×10 first quality ,,	13	0	0	" "
20×12 " "	13	15	0	" "
16×8 "	7	5	0	" "
22×10 best blue Portmadoc	12	12	6	" "
16×8 " "	6	12	6	" "
20×10 best Eureka unfading green	15	17	6	" "
20×12 " "	18	7	6	" "
18×10 " "	13	5	0	" "
16×8 " "	10	5	0	" "
20×10 permanent green	11	12	6	" "
18×10 " "	9	12	6	" "
16×8 " "	6	12	6	" "

TILES.

	s.	d.	
Best plain red roofing tiles	42	0	per 1000, at rly depôt.
Hip and Valley tiles	3	7	per doz. "
Best Broseley tiles	50	0	per 1000 "
Do. Ornamental tiles	52	6	" "
Hip and Valley tiles	4	0	per doz. "
Best Ruabon red, brown, or brindled do. (Edwards)	57	6	per 1000 "
Do. Ornamental do.	54	6	" "
Hip tiles	4	1	per doz. "
Valley tiles	3	8	" "
Best "Rosemary" brand plain tiles	48	0	per 1000 "
Best Ornamental tiles	50	0	" "
Hip tiles	4	0	per doz. "
Valley tiles	3	8	" "
Best "Hartshill" brand plain tiles, sand-faced	50	0	per 1000 "
Do. pressed	47	6	" "
Do. Ornamental do.	50	0	" "
Hip tiles	4	0	per doz. "
Valley tiles	3	6	" "
Staffordshire (Hanley) Reds or Brindled tiles	42	6	per 1000 "
Hand-made sand-faced	45	0	" "
Hip tiles	4	0	per doz. "
Valley tiles	3	6	" "

WOOD.

BUILDING WOOD.	At per standard. £	s.	d.	£	s.	d.
Deals: best 3 in. by 11 in. and 4 in. by 9 in. and 11 in	13	10	0	15	0	0
Deals: best 3 by 9	13	0	0	14	0	0
Battens: best 2½ in. by 7 in. and 8 in., and 3 in. by 7 in. and 8 in.	11	0	0	12	0	0
Battens: best 2½ by 6 and 3 by 6	0	10	0	less than 7 in. and 8 in.		
Deals: seconds	1	0	0	less than best		
Battens: seconds	0	10	0	"		
2 in. by 4 in. and 2 in. by 6in.	9	0	0	10	0	0
2 in. by 4½ in. and 2 in. by 5 in.	8	10	0	9	10	0
Foreign Sawn Boards—						
1 in. and 1¼ in by 7 in.	0	10	0	more than battens		
¼ in.	1	0	0	"		
Fir timber: best middling Danzig or Memel (average specification)	At per load of 50 ft. 4	10	0	5	0	0
Seconds	4	0	0	4	10	0
Small timber (8 in. to 10 in.)	3	12	6	3	15	0
Small timber (6 in. to 8 in.)	3	0	0	3	10	0
Swedish balks	2	10	0	3	0	0
Pitch-pine timber (30 ft. average)	4	0	0	4	15	0
JOINERS' WOOD.	At per standard.					
White Sea: first yellow deals, 3 in. by 11 in.	24	0	0	25	0	0
3 in. by 9 in.	22	0	0	23	0	0
Batten 2½ in. and 3 in. by 7 in.	16	10	0	18	0	0
Second yellow deals 3 in. by 1 in.	18	10	0	20	0	0
" " 3 in. by 9 in.	17	10	0	19	0	0
Battens, 2½ in. and 3 in. by 7 in.	13	10	0	14	10	0
Third yellow deals, 3 in. by 11 in. and 9 in.	13	10	0	15	0	0
Battens, 2½ in. and 3 in. by 7 in.	11	0	0	12	0	0
Petersburg first yellow deals, 3 in. by 11 in.	21	0	0	22	10	0
Do. 3 in. by 9 in.	18	0	0	19	10	0
Battens	13	10	0	15	0	0

WOOD (*continued*).

JOISERS' WOOD (*continued*)—	At per standard. £	s.	d.	£	s.	d.
Petersburg second yellow deals, 3 in. by 11 in.	16	0	0	17	0	0
Do. 3 in. by 9 in.	14	10	0	16	0	0
Battens	11	0	0	12	10	0
Third yellow deals, 3 in. by 11 in.	13	0	0	14	0	0
Do. 3 in. by 9 in.	12	10	0	14	0	0
Battens	10	0	0	11	0	0
White Sea and Petersburg—						
First white deals, 3 in. by 11 in.	14	10	0	15	10	0
" " 3 in. by 9 in.	13	10	0	14	10	0
Battens	11	0	0	12	0	0
Second white deals, 3 in. by 11 in.	13	10	0	14	10	0
" " 3 in. by 9 in.	12	10	0	13	10	0
Battens	10	0	0	11	0	0
Pitch-pine: deals	18	0	0	21	0	0
Under 2 in. thick extra	0	10	0	1	0	0
Yellow pine—First, regular sizes	44	0	0	upwards.		
Oddments	32	0	0	"		
Seconds, regular sizes	33	0	0	"		
Oddments	28	0	0	"		
Kauri Pine—Planks, per ft. cube	0	3	6	0	5	0
Danzig and Stettin Oak logs—						
Large, per ft. cube	0	3	0	0	3	9
Small " "	0	2	6	0	2	6
Wainscot Oak Logs, per ft. cube	0	5	6	0	6	0
Dry Wainscot Oak, per ft. sup. as inch	0	0	8½	0	0	9½
¼ in. do. do	0	0	7	—		
Dry Mahogany—Honduras, Tabasco, per ft. super. as inch	0	0	9	0	1	0
Selected, Figury, per ft. super. as inch	0	1	6	0	2	6
Dry Walnut, American, per ft. super, as inch	0	0	10	0	1	0
Teak per load	17	0	0	22	0	0
American Whitewood Planks, per ft. cube	0	4	0	0	5	0
Prepared Flooring, etc.—	Per square.					
1 in. by 7 in. yellow, planed and shot	0	13	6	0	17	0
1 in. by 7 in. yellow, planed and matched	0	14	0	0	18	0
1¼ in. by 7 in. yellow, planed and matched	0	16	0	1	0	0
1 in. by 7 in. white, planed and shot	0	12	0	0	14	6
1 in. by 7 in. white, planed and matched	0	12	6	0	15	0
1¼ in. by 7 in. white, planed and matched	0	15	0	0	16	6
¾ in. by 7 in. yellow matched and beaded or V-jointed brds.	0	11	0	0	13	6
1 in. by 7 in. " "	0	14	0	0	18	0
¾ in. by 7 in. white " "	0	10	0	0	11	6
1 in. by 7 in. " "	0	12	9	0	15	0

6 in. at 6d. to 9d. per square less than 7in.

JOISTS, GIRDERS, &c.

	In London, or delivered Railway Vans, per ton. £	s.	d.	£	s.	d.
Rolled Steel Joists, ordinary sections	7	0	0	7	10	0
Compound Girders, ordinary sections	9	0	0	10	0	0
Steel Compound Stanchions	11	0	0	12	0	0
Angles, Tees, and Channels, ordinary sections	9	0	0	10	0	0
Flitch Plates	9	0	0	9	10	0
Cast Iron Columns and Stanchions including ordinary patterns	7	10	0	8	10	0

METALS.

	Per ton, in London. £	s.	d.	£	s.	d.
IRON—						
Common Bars	8	10	0	9	0	0
Staffordshire Crown Bars, good merchant quality	8	15	0	9	5	0
Staffordshire "Marked Bars"	10	10	0	—		
Mild Steel Bars	8	15	0	9	5	0
Hoop Iron, basis price	9	5	0	9	10	0
" " Galvanised	17	0	0	—		
(*And upwards, according to size and gauge.)						
Sheet Iron Black—						
Ordinary sizes to 20 g.	9	15	0	—		
" " 24 g.	10	15	0	—		
" " 26 g.	12	5	0	—		
Sheet Iron, Galvanized, flat, ordinary quality—						
Ordinary sizes, 6 ft. by 2 ft. to 3 ft. to 20 g.	15	0	0	—		
Ordinary sizes to 22 g. and 24 g.	15	10	0	—		
" " 26 g.	14	10	0	—		
Sheet Iron, Galvanized, flat, best quality—						
Ordinary sizes to 20 g.	18	0	0	—		
" " 22 g. and 24 g.	18	10	0	—		
" " 26 g.	20	0	0	—		
Galvanised Corrugated Sheets—						
Ordinary sizes, 6 ft. to 8 ft. 20 g.	14	10	0	—		
" " 22 g. and 24 g.	14	15	0	—		
" " 26 g.	16	5	0	—		
Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. by 20 g. and thicker	12	0	0	—		
Best Soft Steel Sheets, 22 g. & 24 g.	13	0	0	—		
" " " 26 g.	15	0	0	—		
Cut Nails, 3 in. to 6 in. (Under 3 in., usual trade extras.)	10	10	0	11	0	0

LEAD, &c.

	Per ton, in London. £	s.	d.	£	s.	d.
LEAD—Sheet, English, 3lb. and up.	16	10	0	—		
Pipe in coils	17	0	0	—		
Soil pipe	19	0	0	—		
Compo pipe	20	0	0	—		
ZINC—Sheet—						
Vielle Montagne ton	26	10	0	—		
Silesian	26	5	0	—		
COPPER—						
Strong sheet per lb.	0	1	0	—		
Thin " "	0	1	1	—		
Copper nails "	0	0	10	—		
Copper wire "	0	0	10	—		
BRASS—						
Strong Sheet "	0	0	11	—		
Thin "	0	1	0	—		
TIN—English Ingots "	0	1	5	—		
SOLDER—Plumbers "	0	0	7	—		
Tinmans "	0	0	9½	—		
Blowpipe "	0	1	0	—		

ENGLISH SHEET GLASS IN CRATES OF STOCK SIZES.

15 oz. thirds	2½d. per ft. delivered.
" fourths	1½d. " "
21 oz. thirds	3d. " "
" fourths	2½d. " "
26 oz. thirds	4d. " "
" fourths	3d. " "
32 oz. thirds	4½d " "
" fourths	4½d. " "
Fluted Sheet, 15 oz	3½d. " "
" 21 oz.	4½d. " "

ENGLISH ROLLED PLATE IN CRATES OF STOCK SIZES.

⅛ Hartley's	2½d. per ft. deliverd.
⅜ "	2½d. " "
½ "	2½d. " "
Figured, Oxford Rolled and "Oceanic" Glass, white	3½d. " "
" " tinted	5d. " "
OTHER GLASS—	
"Arctic" Glass, white	3½d. " "
" " tinted	5d. " "
" " Ruby and opalescents	1s.

OILS, &c.		£	s.	d.
Raw Linseed Oil in pipes	per gallon	0	1	11
" " ,, in barrels	"	0	2	0
" " ,, in drums	"	0	2	3
Boiled ,, ,, in barrels	"	0	2	3
" " ,, in drums	"	0	2	6
Turpentine in Barrels	"	0	2	6
" in drums	"	0	2	8
Genuine Ground English White Lead	per ton	21	0	0
Red Lead, Dry	"	20	0	0
Best Linseed Oil Putty	per cwt.	0	7	0
Stockholm Tar	per barrel	1	12	0

VARNISHES, &c.	Per gallon.		
Fine Pale Oak Varnish	0	8	0
Pale Copal Oak	0	10	6
Superfine Pale Elastic Oak	0	12	6
Fine Extra Hard Church Oak	0	10	0
Superfine Hard-drying Oak, for seats of Churches	0	14	6
Fine Elastic Carriage	0	12	0
Superfine Pale Elastic Carriage	0	16	0
Fine Pale Mapel	0	16	0
Finest Pale Durable Copal	0	18	0
Extra Pale French Oil	1	1	0
Eggshell Flating Varnish	0	18	0
White Pale Enamel	1	4	0
Extra Pale Paper	0	12	0
Best Japan Gold Size	0	10	6
Best Black Japan	0	16	0
Oak and Mahogany Stain	0	9	0
Brunswick Black	0	8	0
Berlin Black	0	16	0
Knotting	0	10	9
French and Brush Polish	0	10	6

TENDERS.

Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursday.* [N.B.—We cannot publish Tenders unless authenticated either by the architect or the building owner; and we cannot publish announcement of Tenders accepted unless the amount of the Tender is stated, nor any list in which the lowest Tender is under 100*l.*, unless in some exceptional cases and for special reasons.]

* Denotes *accepted.* † Denotes *provisionally accepted.*

ACTON.—For new public offices, for the Urban District Council. Messrs. W. H. Raffles & J. B. Gridley, architects, 10, Gray's Inn-square, W.C.:—

F. G. Minter, High-street, Putney £15,608

BAUMBER (Lincolnshire).—For alterations at school, for Lindsey County Council Education Committee. Messrs. Scorer & Gamble, Architects, Bank-street-chambers, Lincoln:—

Sutton	£236 15 0	Bell & Sons	£192 0 0
J. W. Giles	230 17 0	Sutton & Horton, Louth-road, Horncastle*	190 0 0
C. Hensman & Son	207 7 6		
K. Miller & Son	198 0 0		

BECKENHAM.—For making up Perth-road, Piquet-road, and Witham-road, for the Urban District Council. Mr. J. A. Angell, Surveyor, Beckenham:—

—	Perth-road.	Piquet-road.	Witham-road.	Total.
	£	£	£	£
F. & G. Foster	575	557	252	1,384
Free & Sons	430	481	225	1,136
Fry Bros.	424	472	216	1,112
W. Pearce	385	410	193	988
Woodham & Sons	362*	411	192	965
Mowlem & Co.	365	400*	184*	949

BLEDLOW RIDGE (Bucks).—For the erection of a detached house at Bledlow Ridge, Bucks, for Mr. Frederick Burdett. Mr. S. C. Hart, architect, 26, Bush-lane, E.C.:—

Webster & Hawkes	£1,390 0 0	Hunt & Sons	£1,113 0 0
Webster & Cannon	1,288 0 0	Wallis & Co.	1,004 18 10
Kingerlee & Co.	1,195 0 0	Shellard & Co.	987 0 0
		Thompson & Co.*	958 0 0

DANYDERI.—For erecting thirty-eight houses, for Merthyr Tydfil Corporation. Mr. T. F. Harvey, Borough Engineer:—

Jones Bros., Quakers-yard { £165 0 0 per house. / £409 5 3 street works.

DOVER.—For street improvement, London-road, for the Borough Council. Mr. W. C. Hawke, Borough Engineer, Maison Dieu House, Biggin-street, Dover:—

G. Munro, Dover* £371 19 2

EAST HAM.—For hot-water apparatus at Essex-road school, for the Education Committee. Mr. R. L. Curtis, architect, 11-12, Finsbury-square, E.C.:—

General Iron Foundry Co., Ltd., 43, Upper Thames-street, E.C.*	£345 0 0

EAST HAM.—For repairing, painting, and sundry works at Essex-road, Hartley-avenue, Plasket-lane, and Shaftesbury-road schools, for the Education Committee. Mr. R. L. Curtis, architect, 11-12, Finsbury-square, E.C.:—

Essex-road School.

Calnan & Son, 242, Commercial-road, E.*	£322 13 9

Hartley-avenue School.

Stokes & Sons, High-street North, East Ham*	362 6 0

Plasket-lane School.

Stokes & Sons, High-street North, East Ham*	412 17 6

Shaftesbury-road School.

Watson & Son, 74, Ruskin-avenue, Manor Park*	409 18 6

FENTON.—For alterations and additions to the Crown Bakery, for Mr. J. Walters. Messrs. Elijah Jones & Jackson, architects, 10, Albion-street, Hanley:—

Tompkinson & Betteley	£647 0	T. Godwin	£569 0
Underhill Bros.	632 0	Bennettt Bros.	560 0
T. Caulcott	625 0	H. Goodwin	540 10
Ball & Robinson	607 0	C. Cornes & Sons	540 0
J. Walters, jun.	595 10	P. H. Bennion	537 0
T. R. Yoxall	595 0	S. Heath, Basford, Stoke-on-Trent*	494 10

HAMMERSMITH. — For making-up and paving Emlyn-road (part of), for the Borough Council, Mr. H. Mair, Borough Surveyor, Town Hall, Broadway, Hammersmith, W.:—

	Excelsior Stone.	Imperial Stone.
A. B. Champness & Co.	£427 0 0	£427 0 0
J. & W. Drake	372 0 0	372 0 0
J. Mowlem & Co., Ltd.	368 0 0	366 0 0
E. Rogers & Co.	359 0 0	369 0 0
F. G. Brummell	355 0 0	365 0 0
G. Wimpey & Co.	335 0 0	335 0 0
W. H. Wheeler & Co., Ltd.	328 0 0	333 0 0
R. Dowley Daniel & Co.	314 19 0	314 19 0
W. E. Rhodes, 2, Airedale-road, South Ealing*	309 0 0	321 0 0

HASLEMERE. — For alterations and additions to Bank premises, for Mr. F. R. Ballard. Messrs. Hodgson & Symmonds, architects, Guildford and Haslemere:—

R. Smith	£419 0	N. Holden	£376 0
C. Doughton	376 16	H. Austin*	320 5

HINCKLEY.—For additional sewage disposal works, Sketchley Farm, for the Urban District Council. Mr. E. H. Crump, engineer and surveyor, Council Offices, Hinckley:—

For Construction of Settling Tanks, Ejector-chamber, Carriers, Screening-chamber, and Engineering Work.

W. Sharpe	£2,779 19 0	E. Fox	£2,468 0 0
J. Macdonald	2,740 16 11	J. Cunliffe	2,455 19 5
C. Chamberlain	2,686 0 0	A. Palmer	2,447 15 0
G. Greaves	2,645 19 0	B. Firth	2,436 2 5
S. Chaplin	2,518 5 6	A. Jewell, Market Harborough*	2,389 15 9
Firth & Co.	2,508 2 8		

For the Supply of Valves, Floating Arms, etc.

Adams & Co.	£168 14 6
Ham, Baker, & Co.	166 7 0
Farrer, Birmingham*	145 0 0

For the Supply and Fixing of 35 b.h.p. Gas Engine, Ejector, Compressor, etc.

Hughes & Lancaster, Westminster*	£840

KIRKBY-CUM-OSGODBY. — For alterations at school, for Lindsey County Council Education Committee. Messrs. Scorer & Gamble, Architects, Bank-street-chambers, Lincoln:—

C. H. Sanderson	£202 6 0
Ranyard	200 0 0
G. Coles	175 10 0
E. Clarke	162 1 4
Sutton, Market Rasen*	160 0 0

LANCASTER.—For erecting a lecture-hall and class-rooms, for the Trustees of the Independent Methodist Chapel. Mr. J. Parkinson, architect, 67, Church-street, Lancaster. Quantities by architect:—

Masonry: Exors. of W. Harrison, Lancaster*	£294 0 0
Joinery: Exors. of J. Parkinson, Lancaster*	270 0 0
Slating and Plastering: T. Cross & Sons, Lancaster*	93 19 6
Plumbing and Glazing: S. Simpson, Lancaster*	106 3 0
Painting: E. Taylor, Lancaster*	19 10 10

LEEK.—For erecting underground conveniences at the corner of Brook-street and Compton-street, for the Urban District Council. Mr. W. E. Beacham, C.E., Surveyor, Town Hall, Leek. Quantities by the Surveyor:—

Mellowes & Co.	£232 15 2	S. Salt, Leek*	£204 0 0
T. Grace	215 11 6		

MOLD (Flintshire). — For sewerage-works, for the Urban District Council. Mr. W. H. Radford, C.E., Albion-chambers, King-street, Nottingham:—

W. Underwood & Bros.	£5,270 1 11
R. Allen	5,252 13 5
R. Peters	4,295 18 6
S. W. Harrison & Co.	4,123 7 0
J. Merritt	3,653 10 11
P. R. Williams	3,326 9 4
E. R. Lester	3,300 0 0
S. Hutton & Co.	3,257 16 0
H. A. Jones	3,205 5 9
R. Williams	3,155 15 9
A. Graham & Sons	3,142 0 0
A. J. Cottle	3,088 18 0
Bower Bros.	2,899 0 0
J. W. Cunliffe	2,896 0 0
T. Harris	2,888 0 0
W. H. Hill	2,824 0 0
H. E. Buckley	2,590 15 8
W. Waring & Sons	2,580 0 0
A. Sykes	2,529 11 4
Firth & Co.	2,421 11 10
H. H. Barry, Nottingham*	2,400 0 0!

ST. HELENS.—For surface and foul water-pipe sewers for the drainage of Orrell Estate, Parr Estate, for the owners. Messrs. Chase & Broom, engineers, 67, Dale-street, Liverpool:—

S. Hutton & Co.	£5,087 0 0
Jowett Bros.	4,322 14 9
Holme & King, Ltd.	4,234 14 2
Williams & Farley	4,105 4 8
L. Morr & Son	3,947 0 0
R. C. Brebner & Co.	3,947 0 0
R. Heaton & Son	3,829 13 0
J. H. Macdonald	3,795 0 0
W. P. Meikle	3,499 18 0
Edmondson & Wyatt, Oldham*	3,294 0 0

SANDHURST (Kent).—For erecting new Council school, to accommodate 200 children, for Kent Education Committee. Mr. Wilfrid H. Robinson, Architect to the Committee:—

J. Gregory	£2,370	J. A. Davison	£2,097 0
Strange & Sons, Ltd.	2,360	G. & F. Penn	2,048 0
T. & J. Tickner	2,290	H. Dixon	2,045 15
Barden & Head	2,281	W. Shippam	2,035 0
Hayward & Paramor	2,198	J. Podger & Sons	1,993 0
J. Lonsdale	2,198	C. E. Skinner	1,988 0
R. A. Lowe & Co.	2,190	L. Edwards	1,950 0
G. Frost & Son	2,181	S. Wise, Seabrook-road, Hythe*	1,926 0
Kirk & Randall	2,167		
G. Potter	2,148		

SOLIHULL.—For new Isolation Hospital, for Solihull and Meriden Joint Council. Messrs. W. H. Ward, architects, Paradise-street, Birmingham:—

Tilt Bros.	£9,999	S. F. Swift	£8,990
W. J. Bloxham	9,742	Bragg Bros.	8,850
W. Jackson	9,400	W. Sapcote & Sons	8,838
T. Rowbotham	9,337	W. Bishop	8,737
W. & J. Webb	9,309	T. Hickman	8,729
G. Robinson	9,286	W. H. Gibbs	8,700
H. Dorse	9,175	W. Pattinson & Sons	8,596
G. Webb & Son	9,138	J. Dallow & Sons	8,530
C. A. Horton	9,138	T. & W. Thompson	8,499
F. H. Smith	8,997	H. Gregory, Olton*	8,240

STOKE-ON-TRENT.—For alterations at Primitive Methodist Church, Lonsdale-street, for the Trustees. Messrs. Elijah Jones & Jackson, architects, 10, Albion-street, Hanley:—

		Alternate Tender.
North of England School Furnishing Co.	£976 6 11	£894 0 7
J. Breeze & Sons	828 10 0	739 10 0
H. Addison & Co., Ltd.	742 10 0	707 10 0
J. Gallimore	710 0 0	680 0 0
T. Godwin	677 0 0	648 10 0
G. Ellis	669 0 0	623 10 0
H. Howlett	614 0 0	579 0 0
F. Frost	605 0 0	536 2 0
Colley & Lindop	591 10 0	552 8 0
J. Walters, jun.	575 0 0	—
C. Cosnes & Sons	577 0 0	549 0 0
W. Thomas & Son	565 0 0	530 0 0
I. Ward & Son	560 0 0	530 0 0
J. Blakemore & Sons	549 0 0	528 0 0
S. Salt	530 10 6	505 0 0
Bennett Bros., Burslem*	490 0 0	465 0 0

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